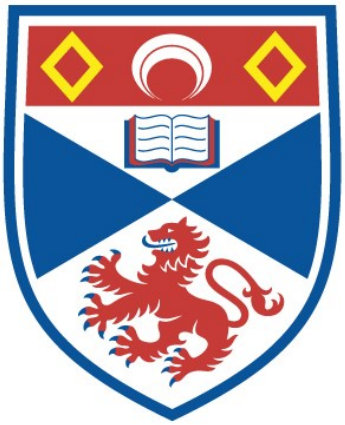
CONSTRUCTING CONTROL IN THE GLOBAL SHIPPING INDUSTRY: THE DEVELOPMENT OF REGULATIONS FOR CO_2 EMISSIONS

Alison Elizabeth MacNeill-Weir

A Thesis Submitted for the Degree of PhD
at the
University of St Andrews



2018

Constructing Control in the Global Shipping Industry: The Development of Regulations for CO_2 Emissions

Alison Elizabeth MacNeill-Weir

University of
St Andrews

This thesis is submitted in partial fulfilment for the degree of

Doctor of Philosophy (PhD)

at the University of St Andrews

September 2018

Declarations

I, Alison Elizabeth MacNeill-Weir, do hereby certify that this thesis, submitted for the degree of PhD, which is approximately 86,000 words in length, has been written by me, and that it is the record of work carried out by me, or principally by myself in collaboration with others as acknowledged, and that it has not been submitted in any previous application for any degree.

I was admitted as a research student at the University of St Andrews in September 2013.

I received funding from an organisation or institution and have acknowledged the funder(s) in the full text of my thesis.

Date 21/06/18 Signature of candidate

Supervisor's declaration

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of PhD in the University of St Andrews and that the candidate is qualified to submit this thesis in application for that degree.

Date 21/06/18 Signature of supervisor

Permission for publication

In submitting this thesis to the University of St Andrews we understand that we are giving permission for it to be made available for use in accordance with the regulations of the University Library for the time being in force, subject to any copyright vested in the work not being affected thereby. We also understand, unless exempt by an award of an embargo as requested below, that the title and the abstract will be published, and that a copy of the work may be made and supplied to any bona fide library or research worker, that this thesis will be electronically accessible for personal or research use and that the library has the right to migrate this thesis into new electronic forms as required to ensure continued access to the thesis.

I, Alison Elizabeth MacNeill-Weir, confirm that my thesis does not contain any third-party material that requires copyright clearance.

The following is an agreed request by candidate and supervisor regarding the publication of this thesis:

Printed copy

No embargo on print copy.

Electronic copy

No embargo on electronic copy.

Date 21/06/18 Signature of candidate

Date 21/06/18 Signature of supervisor

Underpinning Research Data or Digital Outputs

Candidate's declaration

I, Alison Elizabeth MacNeill-Weir, hereby certify that no requirements to deposit original research data or digital outputs apply to this thesis and that, where appropriate, secondary data used have been referenced in the full text of my thesis.

Date 21/06/18 Signature of candidate

Funding

This work was supported by a St Leonard's 600th Scholarship from the University of St Andrews and additional financial support from the Sutherland Trust and the May Wong Smith Trust.

Abstract

Shipping transports between 80-90% of world trade (Smith et al. 2015). In 2012 the industry accounted for around 3% of global emissions with a predicted increase of between 50 and 250% by 2050 (Scott et al, 2017). As such, the question of how to regulate Shipping's CO_2 emissions in line with international climate change agreements (e.g. the Paris Agreement) is of major concern.

Current CO_2 regulations have been criticized as ineffective (Devanney 2010) with growing calls for new regulations (Cullinane & Cullinane 2013; Wan et al. 2018). Existing literature on the regulation of Shipping tends towards impact assessments, scientific critiques and general overviews. This thesis contributes an ethnography of the development of new regulations. Ontologically constructionist, the research is guided by Actor-Network Theory, chosen for its applicability in scientific and technical communities, appreciation of non-human agency and its conceptualization of control through networked heterogeneity. The thesis follows development of new regulations in the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO). Directed by two questions 'What actors constitute the MEPC?' and 'How does it create regulations?' the thesis offers an account of the actors and processes that enable the construction of control over Shipping emissions. This account is produced from observational, interview, documentary and photographic data.

The study contributes to the limited literature on Shipping regulation in three ways: (i) examining actor-roles in the network; (ii) illustrating network convergence informed by sociological framings of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013); and (iii) tracing the agential qualities of concepts and principles enacted and acting in the MEPC. Their shared characteristics are distilled to create the typology: *Meta-actor* which strengthens the descriptive capabilities of ANT, extends the core principle of symmetry, facilitates new identifications of networked power, and illustrates a link between influence and vulnerability. Overall the thesis shows how a heterogeneous network of actors converges to produce regulation for the reduction of CO_2 emissions from Shipping.

Acknowledgements

Firstly, I would like to thank my supervisor Dr Shona Russell for her support, patience and feedback, particularly during the final six months of the PhD. Her scholarly enthusiasm is inspiring and infectious, and I admire her diligence, eloquence and dedication. I would also like to sincerely thank the staff of the School of Management, particularly Professor John Ferguson, Dr Alina Baluch, Professor Sandra Nutley, Professor Jan Bebbington, Diane McGoldrick, Dr Francois-Regis Puyou and Dr Sam Mansell for their help, advice and mentorship. I'd like to thank fellow PhD colleagues and friends, Kelly, Kirsty, Lucy, Toma and particularly Lori and Rhona, for their unwavering compassion and encouragement.

Stepping outside of St Andrews I'd like to thank the participants of this study. Though I cannot name them, they have my continued gratitude for the contributions they made to this research. I'd also like to thank Professor Joanne Scott, Dr Tristan Smith, Dr Nish Rehmatulla, Isabelle Rojon and Domagoj Baresic for their kindness and help during this process. I'd like to say a special thanks to Professor Peilin Zhou, an honourable and committed scholar, for his continued support, advice and friendship, and to Professor Russ Vince, an empathetic and patient scholar, for his academic guidance. To Iain Cupples – thank you for your compassion, support and advice at crucial moments, and to Joyce Lapeyre for helping me to finance my studies. I'd also like to thank the team at Cupar Osteopaths, who provided much more than physical support. To Simran, Anja, Lotty, Phil, Siobhan, Michael, Maria and Francisco for their comfort, reassurance and friendship – thank you.

Finally, I'd like to thank my family. Without them this could not have been achieved. To Euan – with love and laughter you kept me going, I'm proud to be yours. To my parents who never stopped encouraging me – your strength and kindness inspire me and I can't imagine a more loving or supportive family. Here's to a post-PhD future!

Table of Contents

List of Figures

List of Tables

List of Photographs

List of Abbreviations

ANT	Actor-Network Theory
BIMCO	Baltic and International Maritime Council
BRICS	Brazil, Russia, India, China and South Africa
CBDR	Common But Differentiated Responsibilities
CCC	Sub-Committee on Carriage of Cargoes and Containers
CCWG	Clean Cargo Working Group
CLIA	Cruise Lines International Association
CO	Consulting Organisation
CO_2	Carbon dioxide
COP	Conference Of Parties
CSC	Clean Shipping Coalition
CSR	Corporate Social Responsibility
CWR	Carbon War Room
DCS	Data Collection System
DNV GL	Det Norske Veritas Germanischer Lloyd
DWT	Deadweight Tonnage
EC	European Commission
ECA	Emissions Control Area
EEDI	Energy Efficiency Design Index
EEOI	Energy Efficiency Operational Indicator
ETS	Emissions Trading Scheme
EU	European Union
FAL	Facilitation Committee
GHG	Greenhouse Gases
GloMEEP	Global maritime energy efficiency partnerships
GT	Gross Tonnage
HTW	Sub-Committee on Human Element, Training and Watchkeeping
IA	Industry Association
IACS	International Association of Classification Societies
IAPH	International Association of Ports and Harbors
ICAO	International Civil Aviation Organization
ICHCA	International Cargo Handling Coordination Association
ICS	International Chamber of Shipping
IEEWG	Intercessional meeting of the Working Group on Further Technical and Operational Measures for Enhancing Energy Efficiency
IGO	Intergovernmental Organisation
III	Sub-Committee on Implementation of IMO Instruments
IMarEST	Institute of Marine Engineering, Science and Technology
IMO	International Maritime Organization
IMSAS	IMO Member State Audit Scheme

INDC	Intended Nationally Determined Contribution
INTERTANKO	International Association of Independent Tanker Owners
IPTA	International Parcel Tankers Association
ISM	International Safety Management
ISO	International Organization for Standardization
LDC	Least Developed Countries
LEG	Legal Committee
LNG	Liquefied Natural Gas
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MBM	Market-Based Measures
MDO	Marine Diesel Oil
MEPC	Marine Environment Protection Committee
MGO	Marine Gas Oil
MRV	Monitoring, Reporting and Verification
MSC	Marine Safety Committee
NCSR	Sub-Committee on Navigation, Communications and Search and Rescue
NGO	Non-Governmental Organisation
NOx	Nitrogen oxides
OPP	Obligatory Passage Point
PM	Particulate Matter
PPR	Sub-Committee on Pollution Prevention and Response
RMI	Registry of the Marshall Islands
SDC	Sub-Committee on Ship Design and Construction
SEEMP	Ship Energy Efficiency Management Plan
SIDS	Small Island Developing States
SOx	Sulphur oxides
SSE	Sub-Committee on Ship Systems and Equipment
STS	Science and Technology Studies
TC	Technical Co-operation Committee
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
VLCC	Very Large Crude Carriers
WG	Working Group
WSC	World Shipping Council
WWF	World Wildlife Fund

Clarifications & Key Definitions

- IMO and Organization are used interchangeably in this thesis to refer to the International Maritime Organization.
- COP21 and Paris COP are used interchangeably in this thesis to refer to the 21st Session of the Conference of Parties held in Paris, France.
- Treason refers to the Sociology of Treason (Galis & Lee 2013) and not to the act of Treason as the betrayal of one's Country or Government.

International shipping: 'shipping between ports of different countries…International shipping excludes military and fishing vessels'. Definition from (Smith et al. 2015, p xv).

Domestic shipping: 'shipping between ports of the same country…Domestic shipping excludes military and fishing vessels. By this definition, the same ship may frequently be engaged in both international and domestic shipping operations'. Definition from (Smith et al. 2015, p xv).

1. Introduction

This thesis introduces and explores a complex issue in a global industry. It concerns control over CO_2 emissions from the international shipping industry. The sea is the lifeblood of our world connecting lands, providing a vital food source and housing unique ecosystems. Upon the seas the maritime industry has been moving goods for millennia (George 2013; Draffin 2014). Some historians suggest that at the height of the Roman Empire, its trade with India amounted to more than 300,000 tonnes per year, while others have traced maritime insurance as far back as 3000-2000BC (Draffin 2014). Over the centuries, sea trade has grown exponentially. In an era of international interdependence Shipping is more vital than ever before (George 2013). Despite its major impact on our society, the shipping industry sails out of sight and out of mind and is consequently referred to as the *invisible industry* (Cheng & Choy 2007; George 2013). Nevertheless, Shipping is indispensable to our globalised world. It is a *keystone* industry (Osterblom et al. 2015), transporting between 80-90% of global trade by volume (UNCTAD 2017b; Smith et al. 2015). It is the most efficient form of international transport for which we have no substitute (International Chamber of Shipping 2014). In the words of the Secretary General of the International Maritime Organization (IMO) which regulates the industry:

'Without international shipping, half the world would freeze and the other half would starve. Shipping makes the world go round and, so, let us be in no doubt about the broader significance of shipping and the very connection it has to the lives of just about everyone on the planet' Efthimios Mitropoulos, Secretary-General of the IMO, London, 6th October 2005 (Mitropoulos 2005).

Recognizing the importance of Shipping, there is also a need to understand the environmental impacts of this invisible industry. One of the major environmental concerns is rising CO_2 emissions, an issue which is the focus of this thesis and is introduced in the following section.

1.1 Identifying the Issue: Rising CO_2 Emissions

In 2015 at the Paris Conference of Parties, world nations charted *'a new course in the global climate effort'* in the form of the Paris Agreement (UNCC 2018). The aim of this Agreement is to respond to the threat of anthropogenic climate change by keeping temperature rise *'well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius'* (ibid).

While the world nations chart a course for control over temperature rise, the shipping industry is adrift in a sea of uncertainty. Despite being a more efficient form of transport than road, rail or airfreight (Coady & Lister 2013; IMO 2017d; International Chamber of Shipping 2014; Smith et al. 2015), the shipping industry predominantly relies on Heavy Fuel Oil (HFO), a residual substance from the distillation process of crude oil (Bomin 2015). Laden with contaminants, this fuel is a direct cause of exhaust pollution from ships (Lindstad et al. 2015). Figures suggest that the shipping industry emits around 3% of global CO_2 (Cames et al. 2015; Scott et al. 2017). Furthermore, these emissions are on the rise with projections forecasting that under 'business as usual' scenarios, CO_2 emissions from Shipping could rise by 250% by the year 2050 (Smith et al. 2015). Emissions from ships have been shown to cause premature deaths in areas near busy shipping lanes and ports (Bloor et al. 2000; Bailey & Solomon 2004; Corbett et al. 2008; Eyring et al. 2010).Yet, despite these worrying assessments, the shipping industry sits largely outside of current global environmental frameworks such as the Kyoto Protol (Oberthür 2003), the Paris Agreement (Burleson 2016; UNCTAD 2016; Larkin et al. 2017) and regional regulations such as the EU Emissions Trading Scheme (Kågeson 2007; Kremlis 2010). There are no market-based measures for controlling CO_2 emissions in Shipping (World Shipping Council 2015; Shi 2016; Traut et al. 2018) and regulation in this industry has been characterized as reactive (Veiga 2002), slow and uncertain (Strong 2018; Wan et al. 2018).

The safety and environmental impacts of Shipping are regulated by a network of Flag State Registries (DeSombre 2006). Each ship requires a registration to trade and the flag confers nationality onto the ship (ibid). The ship is subject to the rules of the flag to which it is registered. However, this system, described as 'managed anarchy' (George

2013[1]), has been heavily criticized (DeSombre 2006), suffers compliance issues (Cullinane & Cullinane 2013; Chen et al. 2017) and is incredibly complex. Ships are able to join open registries which have no link to the nationality of the owner or owning company, managing company, the Captain, crew, route or cargo (George 2013). Essentially, ship owners can choose the legal framework they wish to work under. Thus, it is of the utmost importance that regulations to control safety and environmental impacts from ships are unilaterally adopted. However, Shipping is largely ignored by global policy research (Lister 2015), and considered the modern 'wild-west' in terms of regulation and governance (Langewiesche 2004).

Against the backdrop of concern over rising emissions the international regulatory organisation for Shipping has been attempting to address the issue. The organisation responsible for regulating this complex area is the International Maritime Organization (IMO), which is a specialized agency of the U.N. The IMO has a Committee Structure with the Marine Environment Protection Committee (MEPC) responsible for developing regulations aimed at preventing, controlling and reducing pollution from ships. Through Committee meetings and Intercessional Working Groups, 174 Member States come together with Consulting Organisations to negotiate and agree on new regulations in the form of Conventions, Amendments and Guidelines.

Thus far, there are two regulations aimed at controlling CO_2 emissions from ships; the Energy Efficiency Design Index and the Ship Energy Efficiency Management Plan (discussed in depth in Chapter 3). The key problem is that these regulations are not yet proving effective enough at reducing CO_2 resulting in calls for amendments to current regulations (Anderson & Bows 2012; Attah & Bucknall 2015; Transport & Environment 2017) and new regulations to reduce CO_2 emissions (Devanney 2010; Longva et al. 2010; Bazari & Longva 2011; Devanney 2011; Anderson & Bows 2012; Cullinane & Cullinane 2013; Johnson et al. 2013; Ančić & Šestan 2015; Transport & Environment 2017; Traut et al. 2018; Wan et al. 2018). As a result of concerns over

[1] Location 146 on kindle edition.

[2] 93,161ships in 2017.

[3] Using the UNCTAD STAT database with 'number of ships' selected.

current regulations and in response to the Paris COP, the IMO has undertaken discussions on new directions for the control and reduction of CO_2 emissions.

1.2 Research Questions, Theory and Methodology

Three facets of a serious and unresolved issue have been addressed and discussed here; (i) Shipping is vital to our society for trade, fuel and food, (ii) the problem of rising CO_2 emissions from ships and, (iii) the lack of effective control through existing regulations. These facets combine to constitute the rationale for undertaking research into the development of new regulations in the IMO's MEPC aimed at controlling and reducing CO_2 emissions.

The extant literature on the IMO consists of broad overviews (e.g. Tan 2006; Karim 2015) and studies which background the IMO (e.g. van Leeuwen 2010; Gulbrandsen 2013). There is a general lack of detail and observational data about the innermost processes of this lynchpin organisation. In response to the lack of detail in the literature this study is positioned as an exploratory ethnography of the MEPC and the process of creating new regulations. Two core questions guided the research:

(i) What is the IMO MEPC? In other words, what actors and associations constitute and perform this network?
(ii) How does the IMO MEPC work? Or, by what processes does this network develop regulatory control?

Actor-Network Theory was mobilized to guide the research. The MEPC has been black-boxed in current literatures and in order to open up and unpack this organisation ANT was used as both a theoretical framing and a methodological orientation (Jóhannesson 2005; Lukka & Vinnari 2017). In applying ANT, the MEPC was understood as a socio-technical network of actors and accordingly it was disassembled into its constituent actors and associations.

Much of ANT work is dedicated to explaining science and knowledge (Latour & Woolgar 1979; Latour 1983; Latour 1987), controversy (Latour 2004a; Venturini 2009;

Venturini 2012), medicine (Mol 1999; Prout 1996; McDougall et al. 2016), education (Fenwick & Edwards 2010) and markets (Callon 1998; Callon et al. 2007) using the key principles of *symmetry*, *relationality* and *heterogeneity*. However as Chapter 3 will show ANT has been applied sparingly in studies of regulation and shipping. As such, the terminological repertoire of ANT (Mol 2010; Callon 1986a) was employed to produce an ethnography of regulation. Additionally, one of the original aims of ANT was to demystify power (Law 1992) and control (Law 1986b). Despite this, contemporary studies making use of ANT conceptualizations of power are scarce. Undertaking an ethnography of regulation in the MEPC offered an opportunity to re-launch ANT enquiries of power and control in a contemporary organisation and answer the question of how control can be constructed over an industry that operates as a watery 'wild west' (Langewiesche 2004), beyond the rule of any one state yet depended on by all.

In order to carry out an ANT-guided ethnography of regulation, fieldwork was undertaken for a period of 15 months from September 2015 to December 2016. Four data types; observation, photographic, interview and documentary were assembled together and analysed in order to produce an account of regulation as the product of a heterogeneous network.

1.3 Thesis Outline and Contributions

The following chapter will expand on the three facets of the issue laid out in section 1.1 by more thoroughly introducing the shipping industry and the literature on emissions, governance in Shipping, the IMO and current regulations. Chapter 3 discusses Actor-Network Theory, why it was chosen for this project and how it was applied to the research. From there Chapter 4 begins with ontological and epistemological positioning of the research before detailing the process of data collection, reflecting on the data generated and the difficulties in the process.

Chapter 5 is the first of three data chapters. It responds predominantly to the first research question: 'What is the IMO MEPC?' by disassembling the IMO MEPC into the constituent actors and associations. This is done by organising the network into the

categories, *spaces, people* and *things* and then exploring the actors within each category. By disassembling the network at an individual level, appreciating the nuanced roles of each actor, it is possible to better understand the collective. Chapter 6, the second data chapter, responds predominantly to the second research question: 'How does the IMO MEPC work?' In response, the processes of submission, discussion, and agreement are unpacked with the aid of the sociological vocabularies: *Translation* (Callon 1986a) and *Treason* (Galis & Lee 2013). These framings are combined to follow the negotiations and to understand how a network of divergent interests are brought into alignment thus expanding on understandings of network practices. Chapter 7, the final data chapter, identifies new sources of agency, distils from these a set of characteristics to form a new actor-category; *Meta-Actors* which is offered as a contribution to the repertoire of ANT (Mol 2010) and to the conceptualizations of networked control making. Thus Chapter 7 offers a response to both research questions by presenting the *missing masses* (Latour 1992) that bring the network together as a durable whole (Latour 1990; Latour 2005). These three chapters work to assemble *spaces, people, things, processes* and *others* into an explanation of the MEPC network.

Chapter 8 presents a summary of the data chapters, tying the stories together and examining the empirical and theoretical contributions made by the thesis. These contributions are put in the context of existing literatures before the limitations of the study are reflected upon and suggestions for future research opportunities are presented. The thesis finalizes with a short section of concluding thoughts.

Overall the study expands the conceptualization of long distance control as a product of a heterogeneous network (Law 1986b) by suggesting that international regulatory control is the product of two symbiotic networks, one of construction and one of implementation. Within the process of construction, the study also highlights collective enactment and relational agency as a way to understand power as a balance of influence and dependence.

2. The Shipping Industry: Scale, Economics and Environmental Impact

Shipping faces a serious issue in the form of rising CO_2 emissions, a major cause of climate change. These rising emissions threaten to undermine national commitments made in the Paris Agreement. This chapter will demonstrate that, as of yet, there is a lack of effective regulatory control over this issue. In doing so the chapter provides the rationale for undertaking a study of the development of new CO_2 reduction regulations.

This chapter offers background information on the shipping industry, its function, features and economics. It then moves on to environmental issues faced by the industry before focusing on rising CO_2 levels and attempts to regulate and control CO_2 emissions from ships. This chapter is written specifically to integrate background contextual detail with a review of the relevant literatures. The chapter illustrates the study of the development of new regulations as an important and necessary contribution to the literature focused on the regulation of Shipping as well as an opportunity to enhance scholarly understanding of contemporary international control.

2.1. Introducing the International Shipping Industry

The international shipping industry is immensely important transporting 10.3 billion tons in 2016 (UNCTAD 2017b), equating to between 80-90% of world trade by volume (Smith et al. 2015). Furthermore, demand for shipping is expected to increase for the foreseeable future (UNCTAD 2017b). There are over 90,000 ships in the merchant trading fleet[2] (UNCTAD 2017a[3]) with a Dead Weight Tonnage (DWT)[4] of nearly 2 billion tons (UNCTAD 2017a[5]). Estimates suggest that in 2013 the amount of containers in the container-shipping sector would be equivalent to 34.5 million twenty

[2] 93,161ships in 2017.

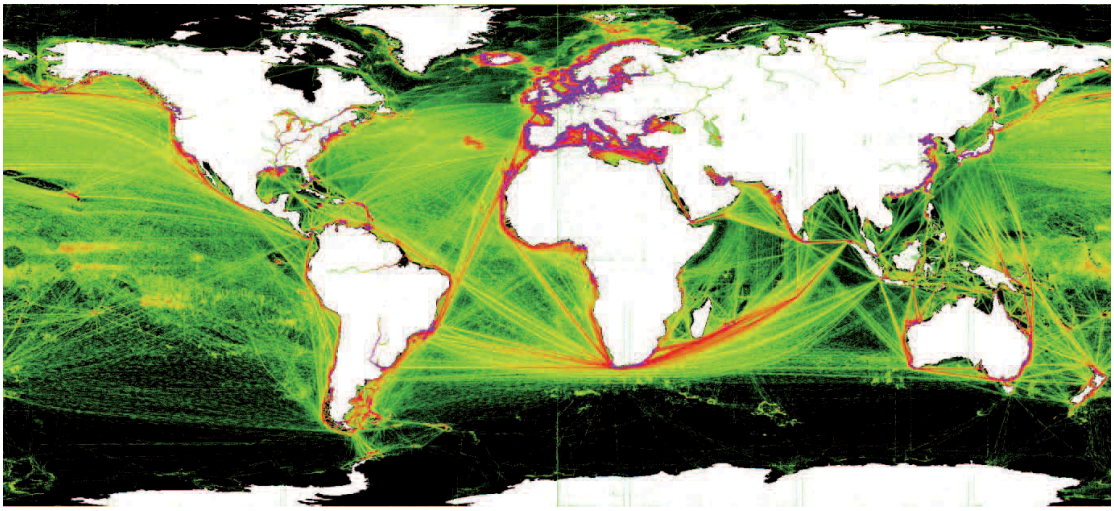
[3] Using the UNCTAD STAT database with 'number of ships' selected.

[4] Dead weight tons (DWT) is a weight based measure of a ships carrying capacity.

[5] Using the UNCTAD STAT database with 'DWT' selected.

foot equivalent units (World Shipping Council 2018a). Figure 2.1 shows a map of vessel activity, giving a visual representation of shipping routes, choke points and the intensity of marine traffic:

Figure 2.1: Intensity Map of the Shipping Industry (Source: Smith et al. 2015, p24)



The shipping industry is essential for the world economy to function. However, despite its scale and importance, it is largely invisible, opaque, and underrepresented in global regulatory research (Lister et al. 2015; Cheng & Choy 2007; George 2013; Lister 2015). This is concerning considering that Shipping faces a number of serious economic and environmental issues.

Due to an economic lag between land-based economies and the shipping industry, Shipping's economy is still struggling from the effects of the 2008 economic recession (Barua & Mittal 2017). This lag is due to ship orders being placed in periods of economic growth and stability which then cause overcapacity in periods of economic decline. In difficult economic conditions it can even be more cost effective for ships to be 'laid up'[6]. Understanding the economic conditions of the industry, particularly during the time period the research was undertaken, is important to contextualize the regulatory negotiations followed in this research. In the course of this research there

[6] The term 'laid up' applies to the process of removing a ship from service. Typically this choice is made when the freight rates are not high enough to cover the running costs (Deutsche Flagge 2018).

have been several indications of financial hardship. Firstly, despite being vital to global trade, the container sector suffered from a $3.5 billion dollar operating loss in 2016 (UNCTAD 2017b). Secondly, Hanjin, once the 7th largest container ship company, was declared bankrupt in February 2017 (Sea Trade Maritime News 2017). Furthermore, estimates put the capital shortfall for the industry as a whole at $30 billion in 2017 (Saul 2017). In the wake of these developments there has been a significant amount of industry consolidation. Indeed, it has been estimated that 9 of the top 20 shipping firms will disappear through consolidation by the end of 2018 (World Maritime News 2018). These economic conditions function as the backdrop against which environmental regulations are discussed and developed.

Along with the economic conditions under which the shipping industry operates, the national economies within the shipping industry equally provide background to the regulatory process. While the largest global economies (by GDP) are the United States, China and Japan (International Monetary Fund 2018), the situation at sea is surprisingly different. The biggest 'Sea-conomies', measured by registered DWT, are Panama (343 million DWT), Liberia (219 million DWT) and the Marshall Islands (216 million DWT) (UNCTAD 2017b). Figure 2.2 presents the top five ship registries in 2017. However, at the time of writing, the Marshall Islands (RMI) has now become the second largest registry in the world (The Marshall Islands Registry 2017). As this thesis is a study of constructing control through international negotiations, understanding that the majority of the world's merchant fleet is registered with developing countries is key to contextualise the actors and arguments detailed in the data chapters.

Figure 2.2: Largest Ship Registries in 2017 (Source: Marshall Islands Registry 2017)

FLAGS	VESSELS	DWT
Panama	8,052	340,135,153
RMI	**3,244**	**223,262,177**
Liberia	3,277	221,180,339
Hong Kong	2,596	176,342,489
Singapore	3,574	126,695,482

While the shipping industry is often referred to as a singular industry, in practice it is a collection of industries. The diversity of Shipping and its various sub-sectors is captured by ship types. The main ship types include general cargo ships, tankers, bulk carriers, container ships, passenger ships, service and offshore vessels and fishing vessels (see Table 2.1).

Table 2.1: Ship Types (Amended from information in Draffin, 2014)

Ship Type	Description
General cargo ships	Historically the workhorses of the industry, they are fairly flexible in cargo and trading routes. Owners attempt to plan voyages to maximise profit and minimise ballast time.
Tankers	Tankers carry liquid cargo of all sorts including, but not limited to, oil, chemicals, liquid gas, and fruit juice.
Bulk carriers	Bulk carriers are designed to carry bulk materials and commodities such as coal, iron ore and bauxite, grain and timber products.
Container ships	Container shipping evolved from the advent of the container in the 1940s-1950s. By the 1970s container ships were moving thousands of 20 foot-long containers, known as Twenty Foot Equivalent Units (TEUs)[7]. Nowadays, containerships move tens of thousands of containers. A 15,000 TEU container ship can carry 746 million bananas, enough for every person in Europe (George 2013).
Passenger ships	Passenger ships include ferries, cruise ships and liners and are subject to some of the most stringent safety regulations.
Other ships	There are many other types of ship include car carriers, specialist dry cargo ships, semi-submersible heavy lifting ships, cable layers, offshore service ships, refrigerated ships (known in the industry as Reefer ships), ice breakers and research vessels.

[7] Although more recently there has been a move towards use of forty foot containers.

As regulations need to be both universally adopted and suitable across sectors (IMO 2017d), the diversity of activity involved in Shipping presents a regulatory challenge in itself and makes this context an important area for questions of environmental control.

This section has provided information on the logistical, economic and sectorial features of the shipping as well as the economic conditions faced by the industry during the research project. As such, it highlights part of the rationale for opting to explore the process of regulating environmental impacts: Shipping is vital, complex and facing challenges. The following section introduces the variety of environmental issues within the industry before moving on to focus on CO_2 emissions and in doing so it builds on the rationale for exploring this context.

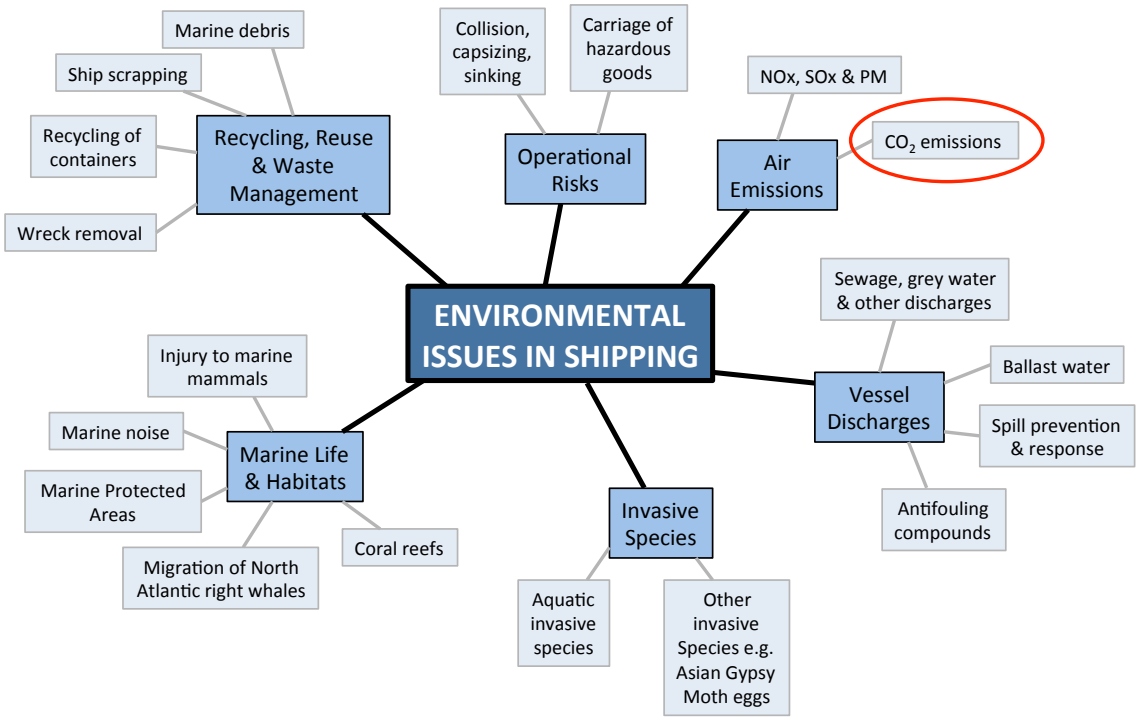
2.2 Environmental Issues in Shipping

Pollution of the marine environment has been defined by the United Nations Convention on the Law of the Sea (UNCLOS) as:

'...the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities'
(UNCLOS Part 1, Article 1.(4).)

As Figure 2.3 below illustrates, Shipping is associated with a wide variety of environmental impacts, which are diverse, complex, interrelated and sometimes unique to the industry (for example the issue of invasive species carried in ballast water).

Figure 2.3: Environmental Issues in Shipping (Source: Author's own with categories from World Shipping Council 2018b)



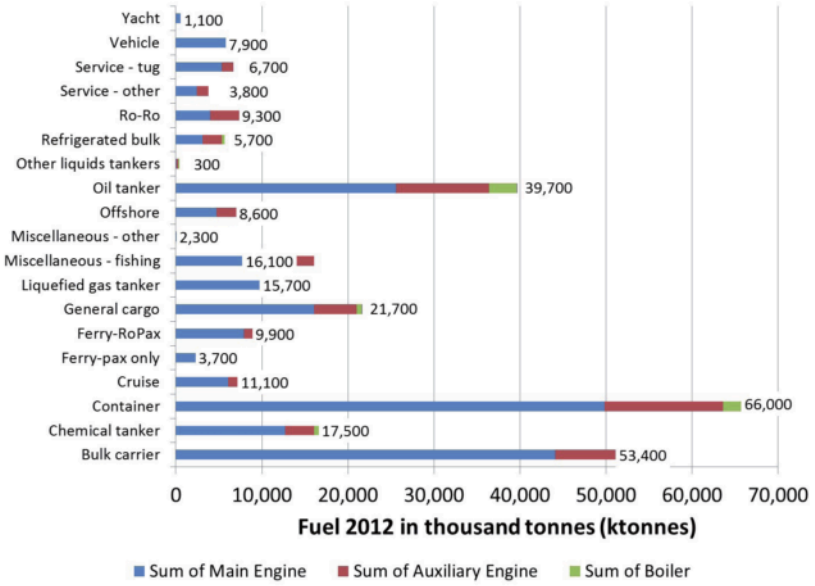
The red ellipse in Figure 2.3 indicates the focus of this thesis however before discussing CO_2 emissions, this section will discuss the issue of air emissions overall, introducing in particular Sulphur Oxides (SOx), Nitrogen Oxides (NOx) and Particulate Matter (PM).

The cause of SOx, NOx, PM and CO_2 emissions from Shipping is the type of fuel burned. Ships carry bunker fuel, 80% of which is made of Heavy Fuel Oil (HFO)[8] (Notteboom & Vernimmen 2009). HFO is the sludgy residue of the distillation process (ibid) only one higher on the scale of distillate than tarmac. The fuel is so dense that it can be walked on at room temperature (Harrould-Kolieb 2008) and it requires very large engines to use, for example Emma Maersk's engine weighs 2300 tons and is bigger than an average four-story building (ZME Science 2017). Due to the weight of the ships and the size of the engine needed to propel them, fuel consumption in this industry is relatively high and a major part of the cost of operations (Notteboom & Vernimmen

[8] Other bunker fuels include marine diesel oil (MDO) and marine gas oil (MGO).

2009). Indeed, energy costs represent 60-70% of operational costs (Rehmatulla & Smith 2015b). Figure 2.4 illustrates the fuel consumption of ship types in 2012, which in turn serves to highlight the scale of use of HFO and emphasizes the problem of exhaust pollution.

Figure 2.4: Summary Graph of Annual Fuel Consumption Broken Down by Ship Type and Machinery Component for the Year 2012 (Source: Smith et al. 2015, p7)



When the issue of emissions is raised, Shipping is often lauded as the most efficient form of transport in that it produces lower emissions per unit carried than the airline or rail industries (Coady & Lister 2013; International Chamber of Shipping 2014; IMO 2017d; Smith et al. 2015). However, due to the volume carried by sea and the fuel used by the majority of ships, air emissions have been a concern in the shipping industry for some time. Indeed, if the shipping industry were a country it would be the 6th largest emitter of greenhouse gases; higher than Germany (Harrould-Kolieb 2008). Furthermore, in 2009 it was reported that confidential data from industry experts suggested that the world's biggest 15 ships emit as much pollution as all of the world's cars (Vidal 2009). Thus, there is a clear need to control air pollution from ships.

While this thesis focuses on CO_2 emissions and associated regulation, it is helpful to review the approaches to control other air emissions, in particular Sulphur Oxide (SOx) emissions, in order to highlight disparity between the progress made on regulating both forms of air emissions from ships. SOx emissions, which are a cause of acid rain, were once projected to surpass all land based emissions by 2015 (Neef 2012). Along with the danger to the environment, air pollution negatively impacts human health. Research suggests those living near ports are at higher risk of developing respiratory problems and even premature death as a result of exposure to pollution (Bailey & Solomon 2004; Corbett et al. 2008); and the particulate matter contained in shipping emissions can cause approximately 60,000 cardiopulmonary and lung cancer deaths each year (Harrould-Kolieb 2008; Corbett et al. 2008).

In response to rising concerns of SOx, NOx and PM, there has been a move towards the use of alternative fuels, especially in Emission Control Areas (ECAs).and some Ports (Notteboom & Vernimmen 2009). ECAs are specific regions where vessels must comply with mandatory measures for the reduction and control of Nitrogen Oxides (NOx) and Sulphur Oxides (SOx). According to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL)[9], vessels have been required to consume fuel with less than 0.1% Sulphur content in ECAs from the 1st of January 2015, unless the vessel has been fitted with equipment to remove Sulphur from the exhaust, has a dispensation, or is using an alternative fuel such as LNG (Kirrane 2018).

There have been continued discussions regarding NOx, SOx and PM in the IMO MEPC for many years. The level of SOx emissions from ships has been regulated by a global cap since the establishment of MARPOL Annex VI in 1997 at which point the limit was 4.5%m/m which has been reduced over the years to the new 2020 target of 0.5%m/m (0.1%m/m inside ECAs) (IMO 2018c; IMO 2018l). Furthermore, in 2016 Finland submitted a research report to the MEPC70 discussions on the entry into force date of the 2020 Sulphur cap. This report showed that delaying the implementation of the

[9] MARPOL will be explained in Section 2.7.1 as part of the current regulatory framework.

Sulphur Cap by just five years from 2020 to 2025 could contribute to more than 570,000 additional premature deaths worldwide between 2020-2025 (Corbett et al. 2016; IMO 2018d). The IMO has now set a limit of 0.5%m/m (mass by mass) in October 2016 that will come into effect from January 1st 2020 (IMO 2018k; IMO 2018d).

In response to the SOx limit prominent industry members have voiced concerns over issues with compliance particularly across different jurisdictions. For example Marc Refsoe Holm of Maersk Oil Trading, *"We feel that the scrubber technology*[10] *potentially allows for an open door for different operators to maybe opt not to run their scrubbers when outside the port limits. We think that there will be major issues when it comes to compliance and enforcement of the regulations"*[11] (World Maritime News 2017)

The technological and regulatory concerns raised regarding SOx emissions highlight two aspects of the shipping industry, which are part of the motivation for this study. One is the need for regulatory control over the environmental impacts of the shipping industry and the other is the complexity of creating regulations as a form of control for an industry that operates in international waters, an area outwith individual national control. Studying the development of international regulations for the shipping industry is an opportunity to understand contemporary approaches to control and governance, specifically in the context of CO_2 emissions – one of the foremost drivers of climate change. The next section focuses on CO_2 emissions from ships and lays out the rising levels as a problem that necessitates action.

[10] A SOx scrubber is used to clean the Sulphur Oxide from the exhaust in order to achieve the limits set out in the regulations.

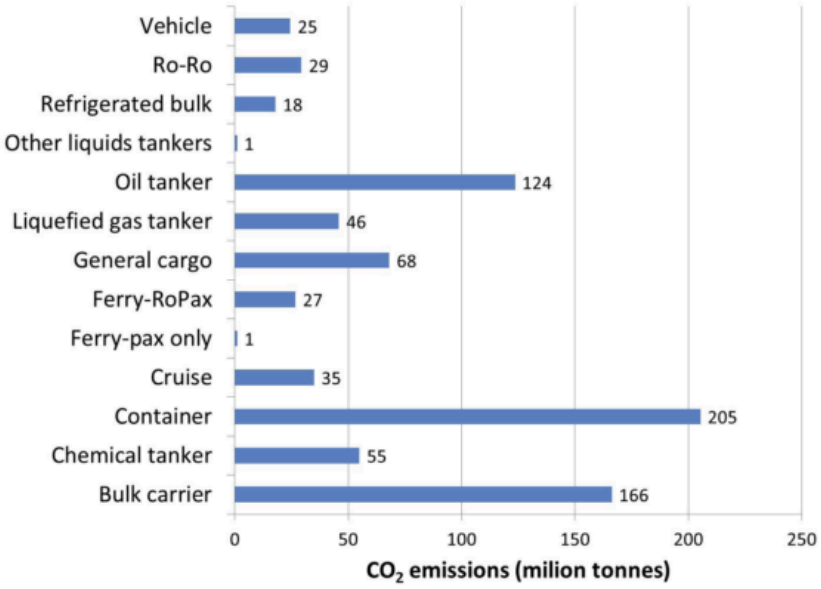
[11] This quote was used for illustrative purposes. As the Sulphur cap is not yet applicable, there can be no academic conclusions on compliance.

2.3 CO_2 Emissions from Ships

Amidst concerns about the environmental and health impacts of shipping emissions and global concerns about climate change, this thesis will focus specifically on the issue of rising CO_2 emissions. This section examines the problem of rising CO_2 emissions from the industry as a central issue for the environmental regulation of Shipping and the rationale for focusing the research on CO_2 regulations.

CO_2 emissions from ships represent around 2-4% of global emissions (Cames et al. 2015). They vary by ship sector and have been broken down and presented in Figure 2.5.

Figure 2.5: CO_2 Emissions by Ship Type for the Year 2012 (Source: Smith et al. 2015, p6)



Even more concerning are the predictions of rising CO_2 emissions. Using a variety of possible scenarios (including 'Business As Usual'), one study projected CO_2 rise to anywhere between 50 and 250% by 2050 (Smith et al. 2015). Another suggested that by 2050 Shipping will account for 17% of global CO_2 emissions (Cames et al. 2015). Despite this, the regulation of CO_2 emissions is limited. Currently there is no limit on CO_2 emissions and no Market-Based Measures (explained in Section 2.8) in place to control the rising CO_2 emissions from ships (World Shipping Council 2015; Shi 2016).

Equally, the shipping industry, though a type of global economy itself with more emissions than some nations (Harrould-Kolieb 2008), is not subject to or included in any internationally binding climate agreements (Pettit et al. 2018) such as the Kyoto Protocol (1997), the EU ETS[12] (adopted in 2003, introduced in 2005), or the Paris Agreement (2016)[13].

Under the Paris Agreement nations have agreed to make efforts to limit climate change to below 2 degrees (UNCTAD 2016; UNCC 2017). Given that the shipping industry lies outside of national, regional and international regulatory frameworks for climate change, the IMO remains the central regulatory authority. Despite being left out of the Paris Agreement (2015), Shipping does have consequences for the attainment of the commitment to limit global temperature rise to well below 2 degrees Celsius (UNCTAD 2016; UNCC 2017). Shipping will be a likely contributor to the 'Emissions Gap', i.e. the gap between the commitment and the amount of current and projected future GHG emissions (Scott et al. 2017). Thus it is imperative for further regulation of CO_2 emissions (Devanney 2010; Longva et al. 2010; Bazari & Longva 2011; Devanney 2011; Anderson & Bows 2012; Cullinane & Cullinane 2013; Johnson et al. 2013; Ančić & Šestan 2015; Transport & Environment 2017; Wan et al. 2018). Also, it is vital to understand the regulation by the IMO and impact of the industry given its virtual invisibility in current climate change governance arrangements. Hence, this study's examination into new regulations for shipping is both timely and significant.

Prior to discussing the IMO and its CO_2 regulations, the next section introduces forms of control in the industry, discussing the shape of these efforts and the literature associated with them.

---

[12] The EU ETS is aimed at reducing emissions of greenhouse gases across Europe by limiting overall emissions (European Commission 2016). Within the limits, companies can buy and sell emission allowances (ibid). This is known as a 'cap-and-trade' approach. The limits are reduced each year and the system represents the cornerstone of EU emissions reduction efforts (ibid). The shipping industry, however, was not and is not covered by this system (Kågeson 2007; Kremlis 2010).

[13] In 2015, there was some discussion about including the shipping industry in the Paris Agreement text and it even appeared in draft text however it was not included in the final text of the Agreement.

2.4 Controlling Environmental Impacts in the Shipping Industry

Controlling pollution from this industry is exceedingly technical and difficult (Karim 2015). Contemporary efforts to control emissions from ships can be framed in two ways. The first, and the focus of this thesis, is to view control as state-led by national governments negotiating and drafting regulations in the IMO, which are then adopted and enter into force. The second possible framing of control is the self-governance efforts by industry organisations, non-governmental initiatives and shipping companies themselves. These framings are a deconstruction of the 'hybrid' governance which controls the industry through the combination of private standards and state/supra-state law (Scott et al. 2017).

There is a small corpus of literature dedicated to non-state governance in shipping, in particular, to Corporate Social Responsibility (CSR), multi-stakeholder initiatives and private standards in the industry. Shipping-related Corporate Social Responsibility (CSR) literature based is relatively limited and coalesces around the view that compared to land-based retail companies, shipping is a CSR laggard (Det Norske Veritas 2004; Fafaliou et al. 2006; Lu et al. 2009; Matthews 2010; Arat 2011; Skovgaard 2011; Neef 2012) and has been uniquely slow in engaging with the idea of CSR (Det Norske Veritas 2004; Neef 2012). In terms of awareness of CSR as a concept, a 2009 case study of the shipping company Wilh. Wilhelmsen (WW) found that 'Corporate Social Responsibility' and 'Triple Bottom Line' were essentially unknown for the majority of those interviewed throughout the organisational structure (Hargett & Williams 2009).

Scholars suggest that further engagement with CSR in the shipping industry is required (Coady & Strandberg 2012; Coady & Lister 2013). Others observe that CSR rhetoric and potentially practice is growing in the industry although it tends to only be in large multinational companies (Arat 2011; Fairplay 2012a). Moreover, motivations of environmental performance based on the top twenty container shipping companies have been found their environmental efforts to be, *'purely driven by fuel saving and regulations'* (Fairplay 2012b).

Certain forms of collaborative activity are suggested as a possible way forward for the industry, particularly those focusing on transparency, legitimacy and enforcement (Coady & Strandberg 2012; Neef 2012; Coady et al. 2013; Parviainen et al. 2017). A number of multi-stakeholder organisations have been established in the shipping industry, including the Sustainable Shipping Initiative, the Cleaner Cargo Working Group and the Trident Alliance. Criticisms of this type of multi-stakeholder group offer important insights into the limitations of non-state governance mechanisms. For example, questions have been raised about the transparency, level of ambition and data reliability of standards set by such groups (Lister et al. 2015; Scott et al. 2017; Poulsen et al. 2018). Moreover, it is argued that the adoption of a cumulative emissions target by the IMO would be more influential which emphasises that state-led industry-wide regulations would be more effective than private standards (Scott et al. 2017).

This emphasis on industry regulation aligns with findings of a 2011 study of CSR reporting in Danish Companies before and after the adoption of a legislative requirement to report on CSR or state that the company has no CSR policy (Skovgaard 2011). The study found that prior to the legislation, only 20% of Danish Shipping companies provided reports on CSR activity and following it 90% of Danish Shipping companies engaged in CSR reporting (ibid). Although limited in scope, this illustrates the ability of formal regulation to effect change in the shipping industry.

Combining the arguments of Scott et al (2017) with the findings of Skovgaard (2011) and calls for further regulation of CO_2 emissions (Devanney 2010; Longva et al. 2010; Bazari & Longva 2011; Devanney 2011; Anderson & Bows 2012; Cullinane & Cullinane 2013; Johnson et al. 2013; Ančić & Šestan 2015; Transport & Environment 2017; Wan et al. 2018), there is a continued need to study control through formal state-led regulations, specifically those developed by the IMO. As such, the IMO will be introduced next before the current regulations for CO_2 emissions from ships are reviewed and discussed.

2.5 The International Maritime Organization

The IMO is a specialized agency of the UN tasked with the regulating the international shipping industry (IMO 2017d). In the words of the Organization[14]:

'*IMO is the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented.*' (IMO 2017d)

At an international conference in Geneva in 1948 a Convention to establish the IMO was created. It entered into force ten years later in 1958 and the first IMO meeting occurred in 1959 (IMO 2017b; Karim 2015). Initially titled the Inter-Governmental Maritime Consultative Organization (IMCO), it was re-named the International Maritime Organization in 1982 (ibid). The IMO is now responsible for more than 50 international Conventions and Agreements and many protocols and amendments that regulate the shipping industry (IMO 2017a). The initial remit of the Organization was to improve the regulation of safety at sea (Karim 2015). The convention for the Safety of Life at Sea (SOLAS) was a landmark achievement by the Organization in 1960 (IMO 2017b). Increasing safety at sea remains a priority of the IMO although the Organization now equally prioritises their environmental focus (IMO 2017d).

The focus on regulating environmental impacts from ships began with the concern over oil pollution at sea, prompted by the Torrey Canyon oil spill in 1967 (IMO 2017b) and the ensuing clean-up operation (Wells 2017). The Torrey Canyon spill was the world's first supertanker disaster, spilling 119,000 tonnes of crude oil in the English Channel and killing more than 25,000 seabirds (Wells 2017). This accident gathered public attention for months and stimulated scientific and regulatory activity at national and international levels (Wells 2017).

[14] As stated in the Clarifications for this thesis, the terms IMO and Organization are used interchangeably. Organization is capitalised and Americanized as this is the correct written form when referring to the IMO.

In reaction to the Torrey Canyon incident, the IMO set about introducing measures to prevent similar accidents and minimize fall-out (IMO 2017b). The International Convention for the Prevention of Pollution from Ships was introduced in 1973 and then subsequently modified by the 1978 Protocol becoming known as MARPOL 73/78 (IMO 2017b) (see section 2.7.1 for detail on MARPOL). The IMO now deals with a number of environmental pollution issues including oil, chemical, garbage, sewage, air pollution, greenhouse gas emissions from vessels, waste dumping, ballast water management, anti-fouling systems and ship breaking and recycling (Karim 2015). This expansion into environmental problems has not been without issue. This evolution of scope has drawn debate about the Organization's mandate and created friction points between its own regulatory approach and instruments and other international treaties such as the Kyoto Protocol (ibid). There has also been growing tensions between it and other international governance organisations such as the EU (ibid). Having introduced the IMO, sections 2.5.1-2.5.3 describe the membership, the Organizational structure, and the general stages of developing regulation in the IMO.

2.5.1 Members States and Other Bodies

At the time of writing the IMO has 174 Member States and three Associated Members[15] (IMO 2018h). To become a Member of the IMO, a state must ratify the 'Convention on the International Maritime Organization'. The first to ratify this convention was the UK in 1949 and the most recent state to join is Armenia (2018). The Organization works on a majority rule basis and each Member State is entitled to one vote (IMO 2010)[16]. Due

[15] Associate Members to the IMO, 'shall have the rights and obligations of a Member under the Convention except that it shall not have the right to vote or be eligible for membership on the Council' (Convention on the International Maritime Organization, Article 9, p12). The three Associated Members are the Faroes, Hong Kong, and Macao China.

[16] '(a) Each Member shall have one vote.

(b) Decisions shall be by a majority vote of the Members present and voting and, for decisions where a two-thirds majority vote is required, by a two-thirds majority vote of those present.

(c) For the purpose of the Convention, the phrase Members present and voting means Members present and casting an affirmative or negative vote. Members which abstain from voting shall be considered as not voting.' (IMO 2010 pp24-25: Convention on the IMO, Part XIV, Articles 62 (a),(b) and (c))

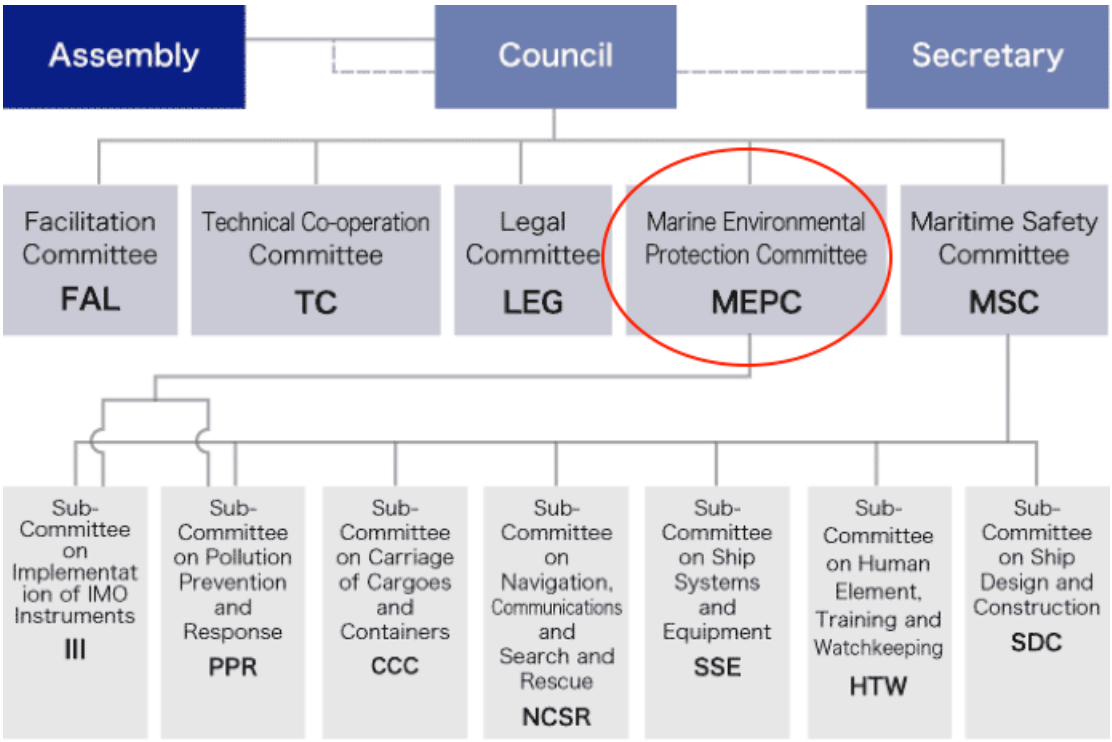
to the international nature of the IMO, International Governance Organisations (IGOs) attend and participate in discussions, for example the European Commission have agreed to cooperate on matters of common interest with the IMO (IMO 2017f). There are 64 such organisations (ibid).

Along with the Member States and IGOs, organisations which have gained 'Consulting Status' may attend IMO meetings (IMO 2010; IMO 2017f; Draffin 2014). Currently, 79 organisations have Consulting Status with the IMO (IMO 2017f). These organisations consist of Industry Associations, for example the World Shipping Council (WSC), International Association of Classification Societies (IACS), International Association of Ports and Harbors (IAPH) etc; Research Groups for example Institute of Marine Engineering, Science and Technology (IMarEST) and Not for Profit Organisations like the World Wildlife Fund (WWF) and the Clean Shipping Coalition (CSC)(IMO 2017f). Organisations with consulting status also have the opportunity to contribute to the work of the IMO.

2.5.2 IMO Structure

Headquartered in London, United Kingdom, the Organisation consists of a Council, an Assembly, a Secretariat, five main Committees, and seven Sub-Committees (IMO 2017g). Figure 2.6 shows the structure of the IMO with a red ellipse highlighting the focus of this thesis.

Figure 2.6: Structure of the IMO (Source: Class NK 2018)



The Assembly, which consists of all Member States, is the highest governing level of the IMO. It meets once every two years and sets the work program and strategic plans, votes on the budget and elects the Council (ibid). The Council is the IMO's executive organ and is responsible for supervising the work of the IMO between Assembly Sessions. The Secretariat refers to the Secretary General of the IMO and nearly 300 members of staff based at the Headquarters in London responsible for facilitating the Organization's work (IMO 2017g). The current Secretary General of the Organization is Mr. Kitack Lim from the Republic of Korea (ibid).

The Marine Safety Committee (MSC) was the first Committee established and is tasked to consider and regulate issues of safety (IMO 2017g). The Legal Committee, established in 1967, deals with legal matters within the scope of the Organization (ibid). The Technical Cooperation Committee was established in 1969 as a subsidiary of the Council, later achieving Committee status in 1984. It is concerned with implementing technical cooperation projects (IMO 2018m). The Facilitation Committee also began as a subsidiary of the Council in 1972 and achieved Committee status in 2008. Its work is

to facilitate a balance between maritime trade and security and eliminate unnecessary 'red tape' in the industry (ibid).

With a focus on CO_2 regulation, this study centres on the work of the Marine Environmental Protection Committee (MEPC). The MEPC was first established as a subsidiary body of the Assembly and raised to full constitutional status in 1985 (ibid). It meets *'at least once a year'* (IMO 2010) and is responsible for the adoption and amendment of conventions and other regulations to control and prevent pollution from ships and the creation of measures to ensure their enforcement (IMO 2017g). The MSC and the MEPC are assisted by Sub-Committees relating to their respective remits. Building on the focus of this thesis, the following section describes the regulatory process that contextualises this study.

2.5.3 Overview of the Regulatory Process

The process of creating regulation involves various stages from drafting Conventions and Amendments, Adoption and Enforcement. This section provides an overview of these stages.

Conventions and Amendments

Conventions are the international treaties by which the IMO frames the regulation of the international shipping industry. Since its inception, the IMO has created, updated and remains responsible for around 50 conventions (IMO 2017a). The majority of these conventions fall into three main categories: (i) safety, (ii) prevention of pollution, and (iii) liability and compensation (IMO 2017a).

Drafting and Adopting Conventions lead into the process of Entry into Force (IMO 2017a). When a convention enters into force it becomes legally binding upon the Governments that ratify it. Before it can enter into force it must be formally accepted by Governments (ibid). This is done though methods such as signature, ratification, acceptance, approval or accession. There are possible combinations of these and the exact method by which the convention will enter into force depends upon the treaty itself (IMO 2017a).

Amendments are the mechanism by which the Organization updates current Conventions. Amendments allow the IMO to adapt its regulatory framework to suit the current issues of the shipping industry (IMO 2017a). 'Tacit Acceptance' was introduced into its regulatory procedure by the IMO in order to speed up entry into force of amendments (IMO 2017a). Previous to this procedure, amendments which were adopted had to receive acceptance from two thirds of the Parties (IMO 2017a). Under Tacit Acceptance an amendment will enter into force at a specified time unless objections to the amendment are received from a specified number of Parties before that date (IMO 2017a; Karim 2015). After the introduction of Tacit Acceptance the amendments now enter into force within 18-24 months generally (IMO 2017a). The application of Tacit Acceptance has not been without criticism, with some drawing attention to the pressure Least Developed States (LDS) are put under to keep up with the technical and regulatory innovation of Developed States (Adede 1977; Karim 2015).

Enforcement

The IMO is responsible for the creation and adoption of legislation. Member Governments formally bound to the Conventions are responsible for enforcing the provisions of the Convention in their own Flag Registries (Section 2.6 will provide an explanation of the Flag Registries). Governments also set the penalties for infringements where applicable (IMO 2017a). In essence, national governments create and agree to implement regulation under the auspices of the Organization however the Organization has no power to enforce regulation. Nevertheless, the IMO does have a Sub-Committee dedicated to the Implementation of IMO Instruments (III) with responsibilities to review rights and obligations of States under the IMO treaties, assess levels of implementation by States, identify implementation issues and review IMO standards concerned with safety and the marine environment (IMO 2017e).

Although this section provides an overview of the regulatory process to orientate this thesis, it also serves to highlight the lack of detail about the inner-workings of the process. Empirical details about the initiation, negotiation and drafting of regulations are notably absent from key texts concerning the regulation of Shipping (e.g. Karim 2015; Tan 2006). Instead these texts tend towards general overviews of the process with

specific comments on certain aspects e.g. North-South tensions in the IMO (Karim 2015). This highlights the need for further detailed examination of the development of new regulations. The following section will explain the flag state system as the framework for the enforcement of the regulations developed in the IMO. In doing so, the complexity of creating regulation for this industry is emphasized.

2.6 Regulatory Implementation: The Flag State System

The shipping industry constitutes a highly technical and complex global network that facilitates international trade. Regulating this industry is a considerable challenge and more difficult to achieve than industries that can be covered by nation-state sovereignty:

'With ocean-going activities, a shipping company's business environment typically takes on a cross-border character and the shipping industry is perhaps the most internationally oriented industry of all. For example, a Liberian listed Greek company may manage a Japanese constructed and Bahamian registered vessel, having recently undergone inspections in Rotterdam and Dubai, carrying cargo for a Russian owned Swiss company with British directors to Asia. Geography does not imply the same physical obstacles to business processes as for land-based industries.' (Vilsted 2004, p11)

As in Section 2.5.3, the IMO does not have an enforcing role in relation to regulating. The role of enforcement falls to a network of other organisations. Enforcement is carried out through the Flag State system. All ships must be registered with a flag state to trade internationally (DeSombre 2006). Registration to a Flag State confers a nationality upon the ship itself (ibid). Ships have had nationalities as far back as the 1800s and in some cases even further (ibid). Flag rule became international law in 1905 by the Permanent Court of Arbitration at The Hague in the form of a decision that States should have the ability to decide which ships they will, 'accord the rights to fly his flag and…to prescribe the rules governing such grants' (ibid). It was later codified into the Geneva Convention on the High Seas (1958) (ibid).

The flag of a ship provides it with the right to travel and trade while signifying the national set of rules it operates under. This system imposes some clarity on an area that could otherwise be ungoverned anarchy (DeSombre 2006). Understanding that ships sail under flag rule is one part of the complex puzzle of regulatory implementation. The second facet is the relationship between the Flag State and the IMO. Nations must sign up to the IMO Convention in order to become Members. From there they adopt conventions and in so doing take responsibility for enforcement.

A problematic feature of the system and one that has gathered criticism is the Open Registry or Flag of Convenience (FOCs). Flags of Convenience allow registration with little to no connection between themselves and the ships flying their flag; a ship flying a certain flag may never even visit that country (DeSombre 2006). Indeed, the rise of FOCs can in part be attributed to the Treaty of Versailles and a declaration signed at the Barcelona Conference on Communications and Transit in 1921, which gave landlocked countries the right to have Flag Registries (ibid). Throughout Shipping history there have been examples of strategic flag-flying however the practice became widespread from the 1920s onwards (ibid). The first Open Registry was Panama which is now the world's biggest Registry (Piniella et al. 2017). In addition to a weaker connection between nation, ship owner and ship operation, FOCs are regarded as less rigorous in their adoption and enforcement of regulations (DeSombre 2006). Indeed, the acceptance and use of FOCs has been historically driven in part by ship owners looking to avoid or lessen the costs associated with more stringent regulation (ibid). Furthermore, a ship owning company can have a fleet of ships flying different flags and therefore sailing under different rules[17].

The Open Registry system has given rise to regulatory avoidance. An example of this was the change of registration by the Cunard Line in 2011. The *Queen Elizabeth* was the first of the historic and iconic British liners to switch registries on the 24th October 2011, ending 171 years of British Registration for the Cunard Liners (Dake 2011).

[17] The Hapag-Lloyd website gives a list of their ships. Clicking on the ship certificate allows the Registry to be seen and they have ships in different Registries in their fleet. Website: https://www.hapag-lloyd.com/en/products/fleet/vessel.html Accessed: 03.02.18

Queen Victoria and *Queen Mary 2* followed shortly after and they now sail under a Bermudian Flag (ibid). Although the official reason given for the registration switch was that the Cunard Line wanted to offer weddings at sea, there has been speculation of regulatory avoidance (ibid). The registry switch was made as little as six weeks after the implementation of an Equality Act in the UK, which requires foreign European crew to be paid the same wages as UK nationals and which was projected to increase costs for UK registered ship owners (ibid). In addition to regulatory evasion, there are other anomalies in the flag registry system, for example the national Marshall Islands Registry is actually run out of an office in Virginia, USA[18]. This highlights the complexity of creating regulations for enforcement by Flag States that is faced by the IMO and emphasizes the Shipping Industry as a unique context in which to explore the construction of regulatory control.

There has been criticism of the effectiveness of the Flag State System generally (DeSombre 2006) and specifically in the context of crew health risks (Bloor et al. 2000), working conditions and seaworthiness (Alderton & Winchester 2002) and regulatory avoidance in the fishing industry (Gianni & Simpson 2005). Equally, there are suggestions that the system could, and should be otherwise, for example linked to the Captain's nationality or to Port State Rule[19] (DeSombre 2006). Although issues and controversies remain unsettled, this thesis chooses to accept the Flag State system as an imperfect arrangement and seeks instead to shed light on the role of the IMO, understanding it as a central part of a complex process of control making in a uniquely challenging context. As such, the chapter now moves to review and discuss current IMO regulations aimed at reducing CO_2 emissions from ships.

[18] International Registries, Inc. *Providing Support to* The Marshall Islands Maritime and Corporate Administrators: https://www.register-iri.com/index.cfm?action=contact Accessed: 03.02.18

[19] By this, the ports would inspect and control the ships as they come through, however controlling ships on the high seas would be a flaw with such a system.

2.7 Current Regulations

Despite being responsible for a significant amount of global CO_2 emissions (Cames et al. 2015), the shipping industry has been largely omitted from global regulatory frameworks (see Section 2.3). While the focus of this thesis is the internationally binding regulations developed by the IMO, one of the current regulations aimed at reducing CO_2 emissions is the EU Monitoring, Reporting and Verification (EU MRV), a regional measure adopted by the EU. The EU MRV entered into force on the 1st of July 2015 and applies to all ship owners and operators of vessels above 5000GT on voyages to, from and between EU ports[20] (DNV GL 2017). The regulation requires the monitoring, reporting and verification of CO_2 emissions from vessels. Furthermore, it requires development of a ship-specific monitoring plan and assessment by an accredited verifier (ibid). At the end of a reporting period a ship-specific Emission Report is created and is independently verified annually (ibid)[21]. Excepting the EU MRV, which is a recent and regional development, the current state of control over CO_2 emissions from ships can only be fully understood by examining the regulations created by the MEPC. The following section introduces the Convention that deals with environmental pollution.

2.7.1 The International Convention for the Prevention of Pollution from Ships (MARPOL)

The International Convention for the Prevention of Pollution from Ships (MARPOL) covers prevention of pollution of the marine environment by ships from either operational or accidental causes (IMO 2018e). There are 156 signatories to MARPOL, representing 99.42% of world tonnage[22] (IMO 2018j). MARPOL was first agreed in 1973, however it did not achieve the number of signatories required and so was amended in 1978 by a special protocol (Draffin 2014). It entered into force on October 2nd 1983 and subsumed the previous OILPOL convention of 1954 (IMO 2018e; Draffin

[20] For exemptions see (DNV GL 2017)

[21] For a discussion and assessment of the EU MRV see Fedi (2017).

[22] The adoption of the annexes within MARPOL differs between Members.

2014). It has six Annexes, each targeting a different facet of potential ship pollution (ibid) (see Figure 2.7).

Figure 2.7: List of MARPOL Annexes (Source: IMO 2018c)

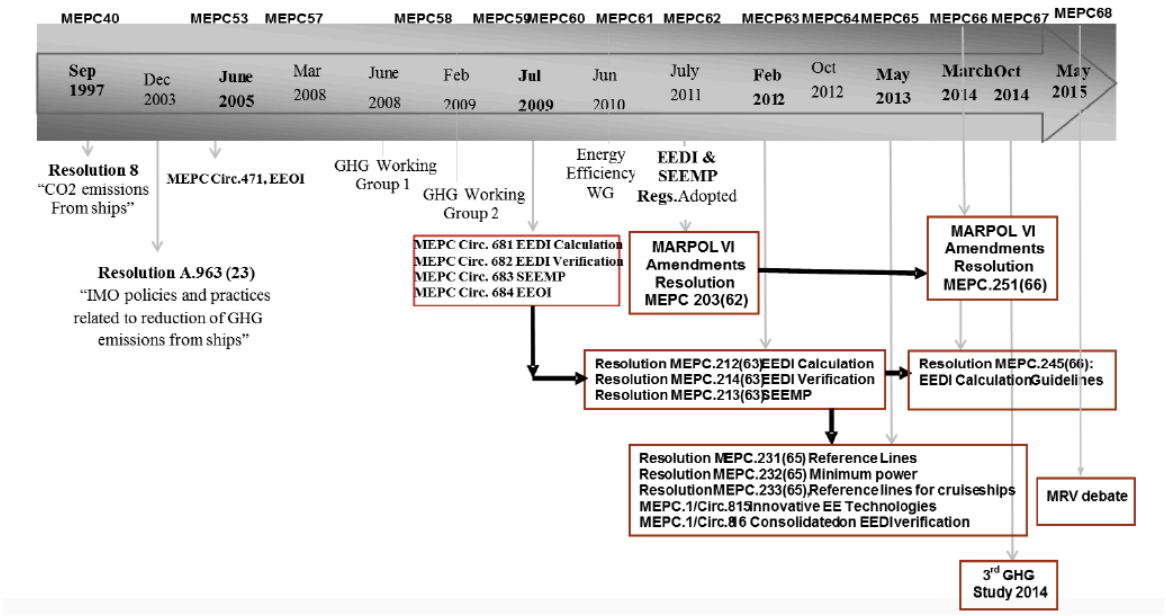
- Annex I Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983)
- Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983)
- Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992)
- Annex IV Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003)
- Annex V Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988)
- Annex VI Prevention of Air Pollution from Ships (entered into force 19 May 2005)

Annex VI is relevant to this study as it regulates air pollution by aiming to limit air pollutants from ships' exhaust gas including NOx, SOx, PM and ozone depleting substances (IMO 2018i). It also regulates shipboard incineration and emissions of volatile organic compounds (VOCs) from tankers (ibid). With the addition of the EEDI and SEEMP regulations, MARPOL also covers the control and reduction GHG emissions from ships (IMO 2018e).

The EEDI and SEEMP represent 'energy-efficiency measures that are legally binding across an entire global industry, applying to all countries' (IMO 2018f). The EEDI is a mandatory regulation applying to the construction of new ships over 400 Gross Tonnage (GT). The Ship Energy Efficiency Management Plan (SEEMP) is a mandatory regulation applying to the operation of all ships. Figure 2.8 below presents a timeline of development and adoption of the EEDI and SEEMP in the context of other GHG discussions in the IMO. Despite recognition of the impacts of CO_2 emissions in the

shipping industry in 1997, the EEDI and SEEMP were only adopted in 2011 reflecting the complexity and speed of the regulatory discussions.

Figure 2.8 – Timeline of the work on GHG Emissions in the MEPC (Source: Bazari 2016, p7)



In order to fully understand the current state of regulatory control the next sections describe and discuss the EEDI and SEEMP regulations and the academic work that has been carried out in relation to them. Explaining the current regulations, particularly the shortcomings, emphasizes the need for further regulations and by extension supports the rationale of this thesis; to examine how regulations are developed.

2.7.2 Energy Efficiency Design Index (EEDI)

The Energy Efficiency Design Index (EEDI) was adopted at MEPC62 in July 2011 along with the Ship Energy Efficiency Management Plan (SEEMP). The EEDI applies to new ships[23] with a gross tonnage of 400 and above, for which the building contract was placed on or after January 1st 2013 (Bazari 2016).

[23] Fishing vessels are not yet included in the EEDI requirement (Bazari 2016).

The EEDI is a calculated index that measures the energy efficiency of a ship in terms of amount of CO_2 generated per tonne-mile of transport work (Devanney 2010; Bazari 2016). The calculation[24] itself can be shown simply as:

$$EEDI = \frac{CO2\ Emissions}{Transport\ Work}$$

And in more detail:

$$EEDI = \frac{Engine\ Power\ x\ Specific\ Fuel\ Consumption\ x\ Carbon\ Factor}{Dead\ Weight\ Tonnage\ x\ Speed}(gCO_2/ton-mile)$$

The EEDI equation is said to be representative of a ship's cost to society in the form of CO_2 emissions divided by the ship's benefit to society in the form of transport work done (IRCLASS Indian Register of Shipping 2018; Bazari 2016). The equation in full is incredibly complex. In the words of one author:

'The formula takes seven dense pages to explain. It is rife with correction factors…The correction factors themselves are complex formulae. The formula gets more complicated on a monthly basis as more correction factors are proposed, with correction factors on correction factors.' (Devanney 2010, p2)

The EEDI was created as a goal-based standard, aimed at driving the market towards implementing energy efficient technologies over time. It is intended to contribute to the reduction of emissions from ships while at the same time allowing a flexibility for owners and designers to choose the technologies they wish to install to meet the requirements (Bazari 2016). In this way, it also accounts for the diverse ship types and activities. The EEDI regulation involves a phased approach with the targets tightening over time as illustrated in Table 2.2.

[24] Complete equations with reference factors can be found in Bazari (2016).

Table 2.2: EEDI Reduction Factors, Cut Off Limits and Implementation Phases (Source: Bazari & Longva 2011: Table i, p2)

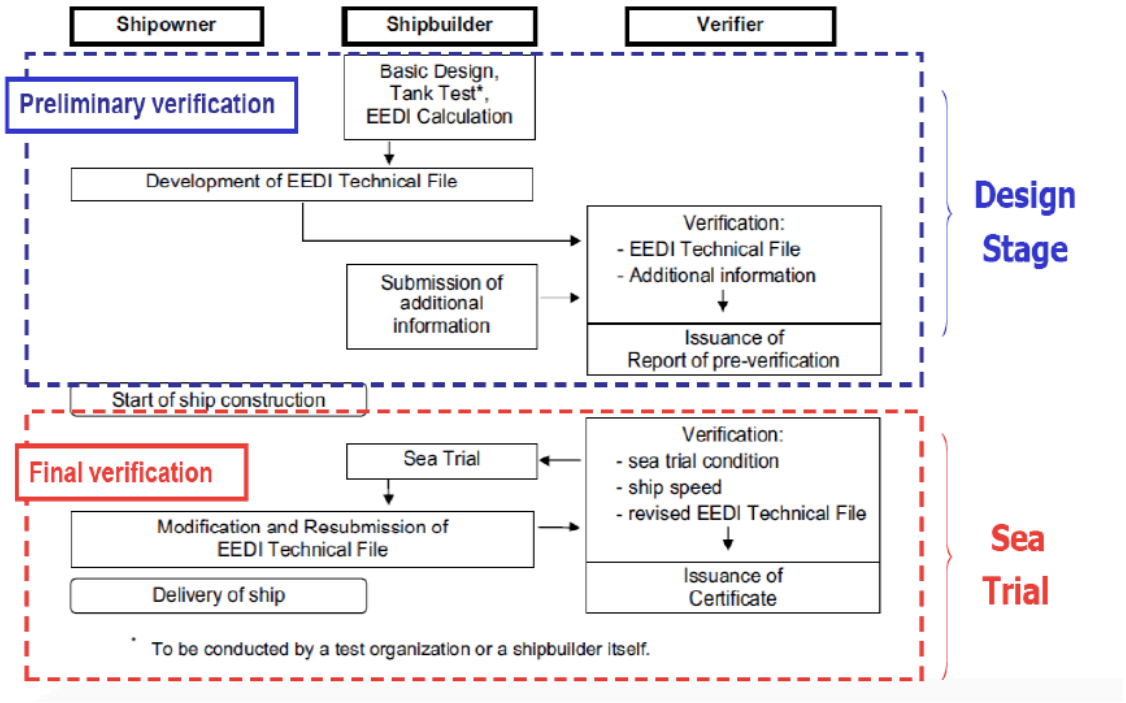
Reduction factors (in percentage) for the EEDI relative to the reference line for each ship type.

	Size	Phase 0 1 Jan 2013 – 31 Dec 2014	Phase 1 1 Jan 2015 – 31 Dec 2019	Phase 2 1 Jan 2020 – 31 Dec 2024	Phase 3 1 Jan 2025 onwards
Bulk Carriers	>20,000 Dwt	0%	10%	20%	30%
	10-20,000 Dwt	n/a	0-10%*	0-20%*	0-30%*
Gas tankers	>10,000 Dwt	0%	10%	20%	30%
	2-10,000 Dwt	n/a	0-10%*	0-20%*	0-30%*
Tanker and combination carriers	>20,000 Dwt	0%	10%	20%	30%
	4-20,000 Dwt	n/a	0-10%*	0-20%*	0-30%*
Container ships	>15,000 Dwt	0%	10%	20%	30%
	10-15,000 Dwt	n/a	0-10%*	0-20%*	0-30%*
General Cargo ships	>15,000 Dwt	0%	10%	15%	30%
	3-15,000 Dwt	n/a	0-10%*	0-15%*	0-30%*
Refrigerated cargo carriers	>5,000 Dwt	0%	10%	15%	30%
	3-5,000 Dwt	n/a	0-10%*	0-15%*	0-30%*

* The reduction factor is to be linearly interpolated between the two values depending on the vessel size. The lower value of the reduction factor is to be applied to the smaller ship size.

The Flag Administration is responsible for carrying out the EEDI verification although in practice this is often done by Recognised Organisations (ROs) i.e. Class Societies (Bazari 2016). The IMO Guidelines, specifically Resolution MEPC.245(67) stipulate the stages of EEDI verification (see Figure 2.9).

Figure 2.9: EEDI Verification Process (Source: Bazari 2016: Figure 4.1)



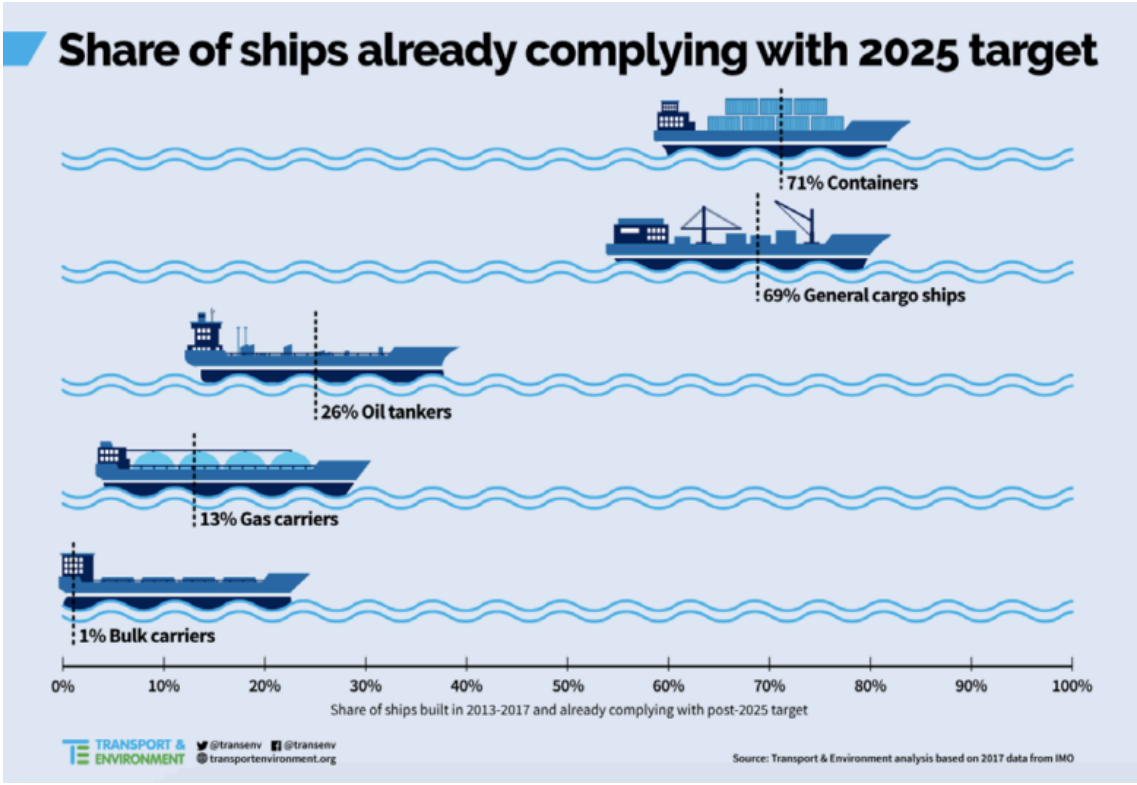
While the EEDI is central to the IMO's efforts to regulate CO_2 emissions, studies identify issues ranging from problematic application in practice to unchallenging requirements leading to over-compliance. Devanney (2010), criticizes the EEDI for its complexity, biases, assumption of linear relationships between CO_2 emissions and installed power, unrealistic and misleading data collection from sea trials and the likelihood that it increases fuel consumption in 'non-boom' times. Furthermore, Devanney (2011) found that the EEDI caused CO_2 emissions to increase slightly, relative to no regulation, in relation to Very Large Crude Carriers (VLCCs) over the market cycle.[25] He suggests that a $50 per ton of CO_2 bunker tax offers a more promising approach as it would reduce VLCC CO_2 emissions by more than 6% over a market cycle (ibid).

[25] This increase was a consequence of the EEDI limiting installed power, inducing owners to install engines with a higher specific fuel consumption and that require smaller less efficient propellers. Thus, while a non-EEDI-compliant ship will sail using little or no more power than an EEDI-compliant ship for 90% of the time, an EEDI-compliant ship will use more fuel 90% of the time (Devanney 2011).

Other studies have expressed concerns that the EEDI will not stimulate improvements in the design of ships, specifically Liquefied Natural Gas (LNG) Carriers (Attah & Bucknall 2015), of which there are around 500 LNG carriers in the global fleet (Corkhill 2017). Furthermore, unburnt methane emissions caused a rise in the GHG emission index of up to 115% which points to EEDI being limited in its application to reduce global warming in this context (Attah & Bucknall 2015). The authors therefore suggest that to be effective, the EEDI must be amended, particularly to account for methane emissions.

A study of bulk carriers suggests that the EEDI will lead to emissions reduction when compared to 'no regulation' scenarios, however, they concluded that, depending on ship type, EEDI reduction rates are either too lenient or too strict (Ančić & Šestan 2015). Furthermore, another study on the suitability of EEDI reduction factors found that much of the new build fleet were surpassing current and future EEDI targets. These works indicate a state of 'over-compliance' and pointing to the need to review the EEDI targets (Transport & Environment 2017). They found that 71% of containerships, 69% of general cargo ships, 26% of tankers and 13% of gas carriers were already in compliance with the (Phase 3) 2025 EEDI requirement, which is depicted in Figure 2.10.

Figure 2.10: Share of Ships Already Complying with 2025 EEDI Requirements (Source: Transport & Environment 2017, p7)



In summary the EEDI was projected to reduce shipping emissions over Business As Usual Scenarios (BAU) (Bazari & Longva 2011; Ančić & Šestan 2015), however its effectiveness remains unclear in the literature with some works showing that it is too lenient (Anderson & Bows 2012; Ančić & Šestan 2015; Transport & Environment 2017) and one suggesting that it would increase CO_2 emissions (Devanney 2011). Although the literature makes differing recommendations from a review of the EEDI requirements, an increase of self-governance to the creation and adoption of MBMs, the majority of research and scholars agree that there is a need for further regulation in order to reduce CO_2 emissions (Devanney 2010; Longva et al. 2010; Bazari & Longva 2011; Devanney 2011; Anderson & Bows 2012; Cullinane & Cullinane 2013; Johnson et al. 2013; Ančić & Šestan 2015; Transport & Environment 2017; Traut et al. 2018; Wan et al. 2018). Having demonstrated the issues with the EEDI for controlling CO_2, the next section turns its attention to the SEEMP.

2.7.3 Ship Energy Efficiency Management Plan (SEEMP)

The Ship Energy Efficiency Management Plan (SEEMP) was adopted at the same MEPC as the EEDI (MEPC62 in July 2011) and entered into force on 1st January 2013 (Johnson et al. 2013). In contrast to the EEDI that seeks to reduce CO_2 emissions though design and construction, the SEEMP aims to reduce CO_2 emissions from ships through operational measures. The regulation requires all ships over 400GT to carry a SEEMP on-board (Bazari 2016). Under SEEMP, owner-operators are required to consider energy efficiency measures through cyclical processes of Planning, Implementation, Monitoring, Self-Evaluation and Improvement (Bazari 2016; Johnson et al. 2013). It is expected that each ship-specific SEEMP should be integrated into a wider corporate energy management approach taken by the company that owns/operates the ship (ibid). The SEEMP was also positioned as a way to increase ship efficiency over time (Bazari 2016), however the instrument does not detail specific energy reduction measures and does not set an overall limit of emissions in relation to individual ships or fleets.

Little has been written about the effectiveness of SEEMP as a regulation. While it is aimed as a non-prescriptive regulation, there are questions over whether it will effect change in the industry and its implementation in practice (Strong 2018). Although it is acknowledged as a method to promote energy efficiency a study commissioned by the IMO itself suggested other regulation remains necessary to stimulate true behaviour change in the industry (Bazari & Longva 2011).

In questioning the SEEMP's ability to reduce CO_2 emissions, Johnston et al. compared it to the International Energy Management Standard ISO 50001 and the International Safety Management (ISM) Code (2013). The ISO 50001 is a best practice standard suitable for use in any organisations to increase energy efficiency while the ISM Code is a mandatory requirement for all ships aimed, '*to ensure safety at sea, prevention of human injury and loss of life and avoidance of damage to the environment, in particular to the marine environment'* (Johnson et al. 2013, p181). This comparison highlighted the gaps in the SEEMP (shown in Table 2.3) which lead the authors to conclude that further regulation is required to reduce CO_2 emissions effectively, with Market-Based

Measures (hereafter MBMs) being identified as necessary (Johnson et al. 2013). Additionally, the complexity of regulating emissions through energy efficiency was emphasized as the authors suggest that energy efficiency gains on an organisational level may be voided by the growth of the sector overall (ibid).

Table 2.3: Comparison between the SEEMP, ISM Code and ISO 50001 (Source: Johnson et al. 2013, p185)

Mentioned
Required
Missing

Table 2. Comparison between the SEEMP, ISM code and ISO 50001.

		SEEMP	ISM	ISO 50001
1	Top management responsibilities			
2	Management representative			
3	Policy			
4	Energy review and baseline		N/A	
5	Plans, goals and indicators		N/A	
6	Implementation and responsibilities			
7	Competence and training			
8	Communication			
9	Documentation			
10	Design and procurement		N/A	
11	Operational control			
12	Monitoring, measurement and analysis		N/A	
13	Internal audit			
14	Nonconformities			
15	Management review			
16	Shipping-specific measures		N/A	N/A

	SEEMP	ISM	ISO 50001
1	-	-	4.2.1
2	-	4	4.2.2
3	3.2	2.2	4.3
4	4.1.1,3	-	4.4.3
5	3.7	-	4.4.5
6	3.8	3.2	4.4.6
7	3.6	6.1,3,5	4.5.2
8	-	6.6-7	4.5.3
9	3.2,9	11.1	4.5.4.1-2
10	-	-	4.5.6-7
11	-	7	4.5.5
12	3.13	-	4.6.1
13	3.17	1.4.6; 12.1	1.4.6;12.1
14	-	9.1,2	9.1-2
15	-	12.2	12.2
16	5	-	-

N/A Not applicable

Note: In the table to the right, relevant sections in each standard are detailed.

In summary, the studies of the EEDI and the SEEMP have shown that the current forms of control over CO_2 emissions are problematic. The literature calls for further official IMO-based regulation, which justifies the exploration of the process of creating new CO_2 regulations in the IMO MEPC undertaken by this thesis. Furthermore, a contemporary study of the regulatory negotiations in the MEPC may address the lack of MBMs in Shipping, despite their identification as necessary in the literature.

The following sections rounds out this chapter by providing a review of academic studies of regulation in shipping (in addition to those already discussed) and studies regarding the IMO in order to demarcate the current literature that frames and supports this study.

2.8 Shipping Governance Literature

Individual regulatory instruments are but one component of governing Shipping. In order to frame this study of control making, this section reviews existing literature outlining the issues that arise in regulating this industry and the role of the IMO as a key regulatory authority.

There is a relative and surprising lack of academic engagement with the regulation of this industry despite the importance of shipping to international trade and national economies (Lister et al. 2015). Many comment on the societal invisibility of the industry (Cheng & Choy 2007; George 2013) but there appears to be little integration of this industry into environmental, governance, organisation or supply chain literatures. There are some broader discussions on sovereignty at sea from legal literatures and issues of jurisdiction, for example Molenaar (2006) on port state jurisdiction, and Milligan (2012) on overlapping jurisdictional claims. As discussed in Section 2.6, the flag state system has been examined in depth by DeSombre (2006), while the state-centric mode of governance has been criticized as a failing to effectively regulate both social and environmental issues (Roe 2013). There has been some discussion on compliance in response to regulation (Mitchell 1994; Bloor et al. 2013; Chen et al. 2017) and an increasing level of scholarly attention centred on the issue of shipping activity in the Arctic as a social, environmental and legal concern (Borgerson 2008; Young 2009; Stokke 2013; Emmerson & Lahn 2014; Kürner et al. 2015). As the problem of CO_2 emissions in this industry grows, there needs to be a complementary growth in research into the governance of these emissions.

Scholars have noted that environmental regulation of the sector is 'complex, and commercially and politically very sensitive' (Poulsen et al. 2016, p58), particularly in the context of emissions (Eyring, Köhler, Lauer, et al. 2005; Eyring, Köhler, Van Aardenne, et al. 2005; Corbett et al. 2008; Eyring et al. 2010;) While CO_2 emissions in the shipping industry are significant and rising (Smith et al. 2015) (see Section 2.3), CO_2 is arguably under-regulated compared to other emissions (Oberthür 2003), especially when considering that SOx emissions have been controlled through industry-wide regulatory limits for years (see Section 2.2). Moreover, as discussed in Section

2.7, the two main regulations that aim to increase energy efficiency, the EEDI and SEEMP, have been critically assessed by the literature with the scholarly consensus calling for amendments and further regulation.

The problem of rising CO_2 emissions has been captured by some scholars (Giziakis & Christodoulou 2012) with critical examinations of national responses to regulation (Shi 2014), criticism of current private and state governance mechanisms (Pettit et al. 2018), identification of levels of implementation of CO_2 reducing technologies (Rehmatulla, Calleya, et al. 2017) and barriers to uptake of efficiency increasing technologies (Smith et al. 2014; Rehmatulla & Smith 2015a; Rehmatulla, Parker, et al. 2017; Rehmatulla & Smith 2015b). These works predominantly find market failures, for example split incentives of ship owners and operators, and information barriers to be causing issues with the uptake of technologies to improve energy efficiency (and by extension reduce CO_2 emissions). In addition, much literature is dedicated to promoting technological solutions for example wind technologies (Mander 2017; Smith et al. 2014; Rehmatulla, Parker, et al. 2017), carbon capture and storage (Zhou & Wang 2014; Neele et al. 2017), LNG and fuel cells (Smith et al. 2014), and other more general and combined proposals (Wang 2010; Anderson & Bows 2012; Lindstad et al. 2015; Larkin et al. 2017; Wan et al. 2018). Finally, a third strand of research suggests the development and implementation of MBMs to reduce CO_2 emissions (Shi 2016; Wan et al. 2018). Within the context of Shipping regulation, the establishment of an industry-wide target or cap on CO_2 and then the creation of mechanisms such as an Emissions Trading System, Incentive and Levy Schemes, Bunker Tax for International Offsetting Funds etc. by the IMO are referred to as MBMs (International Maritime Organisation 2010). On the other hand the EEDI and SEEMP are known as technical and operational measures and do not involve an industry-wide cap or limit on CO_2 emissions (Shi 2016).

The consensus from the literature is that without the development of official regulations as stimulation for the industry uptake of alternative technologies and mitigation efforts, these options remain marginalized. Additionally, as discussed in Section 2.4, the effectiveness of voluntary efforts, private standards and multi-stakeholder initiatives is low and likely to remain so without formal state-led measures.

Considering that the regulations and regulatory framework have been largely criticized with reference to effectiveness and implementation, this thesis aims to take a step upstream and start at the very beginning, the construction and production of regulation itself. It aims to understand the process of creating regulation from within the IMO MEPC. In order to provide a frame of reference for this undertaking, the following section introduces and discusses existing literature on the IMO as a regulatory organisation.

2.9 IMO Literature

Against this backdrop of market uncertainties, regulatory criticism and continued suggestions for improvement, little has been written focusing on the IMO itself and its process of constructing regulation aimed at contributing to global reductions of CO_2 (Lister et al. 2015). Instead, much of the work has focused on understanding the shape of maritime environmental governance (Van Leeuwen 2010) and the general operations of the IMO (Tan 2006; Karim 2015). Specifically, Van Leeuwen (2010) gives a broad stroke explanation of the multiple spheres of authority in global maritime governance, focusing on the shifting authority in offshore oil and gas production. She outlines a number of actors and levels that contribute to governing the maritime industry and suggests that the IMO's position as a regulator may be under threat from organisations such as the EU (ibid). Karim (2015) goes somewhat further in his examination of the IMO to detail the North-South tensions that manifest in the discussions. While useful, these texts are fairly descriptive and lacking in ethnographic or theoretical depth.

In understanding CO_2 regulation from the IMO, Oberthür (2003) remains an important text fifteen years after publication. His discussion of the responses of the IMO and the International Civil Aviation Organization (ICAO)[26] to international climate change found a slow speed and lack of political will to address climate change in both organisations. This comparative study offered some insights into the overall regulatory

[26] The International Civil Aviation Organization (ICAO) is a UN specialized agency, established to set international civil aviation Standards and Recommended Practices (SARPs) to support 'a safe, efficient, secure, economically sustainable and environmentally responsible civil aviation sector.' (ICAO 2018)

cultures of the organisations, including the difficulty of factoring climate change regulations into their work, which is historically technical and safety-focused, rather than political-environmental. His work culminated in suggestions that might catalyse action from these institutions for example; continued pressure from external climate change regimes and domestic and regional action to incentivize progress within IMO and ICAO. Now, 15 years later, criticism of the IMO continues (Pettit et al. 2018), as shown in Section 2.7, and the overall process is considered slow (Strong 2018; Wan et al. 2018).

Drawing on Institutional Theory, Gulbrandsen (2013) examined the role of the EU Commission within the IMO to enhance understanding of institutional interactions and 'nesting' (Hackmann 2012). Specifically, the EU Commission's Permanent Representative was identified as 'entrepreneurial' in framing and negotiating EU coordination and involvement in the regulatory work of the IMO. This research was based on attending one MSC meeting (87th session) and conducting six interviews. In the work by Gulbrandsen (2013), the IMO is the background that allows the exploration of EU international coordination.

Of the scarce literature concerned with the IMO, the aforementioned studies offer limited insights into the actual process of developing regulations within the IMO. This may in part be due to the aims of their respective studies which cast the IMO into the background or as part of a larger whole rather than the key focus.

Moving to the regulation by the IMO, there is limited work on this topic and only one study was directly related to the regulation of air emissions. Svensson (2011) – a Masters thesis – examined regulations of Sulphur Oxide emissions with reference to historical debates in the IMO. Although his work provides some insight into the IMO process, the data collected was largely retrospective, based on analysis of documents and interviews with just one delegation (ibid). Furthermore, he traced the content of the debates rather than examining the process itself, i.e. what actors are involved in creating regulatory control in the MEPC and how progress is accomplished.

Other studies have examined the development of regulations through the IMO suggesting that the IMO should be using its authority in a more effective manner (Silber et al. 2012; Lister et al. 2015). Hackmann (2012) argues that a degree of regulatory fragmentation has led to lack of adoption of a binding MBM which could produce more effective CO_2 reductions. In addition he raises the on-going issue of the realties of the shipping industry, which necessitate a non-discriminatory approach to regulating, and the principle of Common But Differentiated Responsibilities (CBDR), which is applied in the United Nations Framework Convention on Climate Change (UNFCCC). Lister et al. (2015) take up and expand this issue of fragmentation. They suggest that the shipping industry is suffering multi-level regulatory fragmentation and that within the IMO discussions have become crippled by uncertainty and polarization. They argue that certain conditions, such as low visibility of environmental issues and poor interest alignment, are stalling regulatory progress. They further emphasize that enforcement levels vary and as regional regulation is brought in to pick up the regulatory slack from the IMO, control over the industry becomes further fragmented (ibid).

A number of approaches have been used by IMO-focused studies and it is useful to elaborate on these to emphasize the choice of theory and methods of this project. Some scholars made use of document analysis without a conceptual framing in order to construct an explanation of a particular issue, e.g. interaction with the ICAO, SOx regulation or vessel threat to whales (Oberthür 2003; Svensson 2011; Silber et al. 2012). Lister et al. (2015) combined a framing of Transnational Governance Theory with thirty seven in-depth interviews with managers and executives. Thus, the study constitutes a collective of external commentaries on the issue of shipping emissions and the IMO as a regulator and contains no observational detail of the IMO itself.

Hackmann drew on Regime Theory in combination with the framings of institutional interplay and fragmentation to understand the governance architecture of GHG emissions and to question the lack of MBMs for shipping (2012). With this approach he undertook interviews, attended IMO presentations[27] and analysed documents. He

[27] These presentations were not the official regulatory meetings of the IMO.

attributes influence predominantly to Member States and although he identified other aspects which affect the process of developing regulation, such as conflicting regulatory principles, these are not fully recognized as influential in the process and seem to be relegated to contextual elements. Further detail about the practice of creating regulations is required, with particular attention to explaining influential actors in the process.

While valuable and congruent to this study, these works leave much room for further study of the IMO. The extant literature lacks detail on the inner workings of the IMO and the Committee responsible for creating environmental regulations, the MEPC, is largely neglected. Methodologically speaking, there is a lack of direct observation of the actors and practices that construct regulations with authors largely relying on documents and interviews (Svensson 2011; Hackmann 2012; Silber et al. 2012; Oberthür 2003; Lister et al. 2015). Therefore this thesis aims to undertake an in depth study of the regulatory process, focusing on the MEPC. In so doing it offers a study of control-making over an international industry that suffers from complexity, uncertainty, questions of jurisdiction and issues of compliance, adoption and enforcement. In addition, it contributes a uniquely contemporary and focused window into the development of new regulations in the IMO.

2.10 Conclusion

This chapter demonstrated the concerning issue of current and rising CO_2 emissions from the shipping industry, the marginalization of this industry from international climate change governance and the problematic application of current regulations. Various studies suggest that the current regulatory focus on energy efficiency needs to be supplemented with the development of MBMs in the IMO. Scholars have attempted to address this issue and examine the role of the IMO as a regulator, however, there has been no focus on the MEPC itself and very little detail on the actors and processes that develop regulation. This critical review underscores the need for (i) further exploratory research of the IMO, particularly of the MEPC (ii) a greater level of ethnographic detail (iii) a description of the actors and processes that develop regulation and (iv) engagement with theoretical perspectives which allow for actor identification and

constructionist explanations of control. The following chapter presents the theoretical framework chosen to fulfil these criteria and used in forming the research questions, data gathering and writing up.

3. Theoretical Framing: Actor-Network Theory

This chapter opens with an account of the personal journey that, in part, led to the selection of Actor-Network Theory (ANT) to frame and guide this study of the construction of control over shipping emissions through the development of regulations. It then moves on to introduce ANT, discuss relevant literatures and present the approach to using ANT in this research. Overall the chapter's aim is to explain and justify this choice of theoretical framing.

I first began to study the shipping industry during my Masters Degree in Technical Ship Management (2011-2012). I quickly became absorbed with the complexity of the regulatory structure of international shipping. The problem of how to orchestrate control over an industry that operates in such a remote and alien area fascinated me. As I began to learn about the regulatory framework for the industry, the legal complexities and the environmental issues facing Shipping, I also began to appreciate the importance of non-humans in the Shipping community. For example, in the shipping industry it is the practice that the flag 'flown' by the ship confers and symbolizes the laws under which a ship operates. In the container sector, many attribute the invention of the 'box' (i.e. the standard container) as responsible for globalization (Levinson 2006). *Furthermore the sea itself dictates certain rules (for example load lines based on different sea-states and temperatures) and the weather influences routes, choices and journey times. During my own studies I calculated freight rates and propagation of cracks, I modelled engine faults and compared environmental pollutant reducing devices (e.g. Ballast Water Treatment Systems), etc. I also encountered the rise of automation and the envisioning of crewless ships; giants gliding through the sea controlled remotely from land. Thus through my Masters I became sensitized to the marginalization of human agency. In lectures the 'human factor' was just one part of a greater collective and as such I came to understand the shipping industry and its community to be object-full and object-focused.*

3.1 Introduction

This thesis is an examination of firstly, what *makes* the IMO MEPC i.e. what actors and associations constitute the network and secondly, how this organisation constructs control over the international shipping industry through the development of regulations.

Careful consideration was given to the framing of this study as an exploration of the union of regulatory power and international shipping. Chapter 2 illustrated the need for thorough observation and description and pointed towards a framing suitable for an ethnography of regulation. Equally, it was necessary to engage a theoretical perspective that would recognise the influence of non-humans in the shipping industry and that would allow the process of developing regulatory control to be deconstructed. Therefore Actor-Network Theory (hereafter ANT) was chosen to guide the research.

More than a theory alone, ANT has also been presented as a methodology (Law 2004; Jóhannesson 2005; Law 2007a; Lukka & Vinnari 2017) and a rhetorical framework (Callon 1986a). It is known to be notoriously difficult to explain or pin down as it is rarely used as one single framework (Cowan & Carr 2008; Fenwick & Edwards 2010) and instead is often treated as a toolkit for inquiry (Law 2004) that is more easily performed than summarized (Law 1999b). Nevertheless, this chapter sets out to clarify both the choice of ANT and its specific application to the research. First the origin of ANT is explained before its use across different empirical contexts is traced. Following this, the application of ANT in areas key to this research (i.e. environmental research, regulatory research and shipping research) is discussed. The criticisms, tensions and limitations are presented before the chapter moves on to explain the particular set of ANT concepts adopted to guide this research.

3.2 Origin of ANT

The origin of ANT can be traced to the late 1970s and early 1980s. It arose from the field of Science and Technology Studies (STS) (Law 1992; Pickering 1992). Published in a time of increasing sociological interest in the field of science (Pickering 1992), '*Laboratory Life: The Construction of Scientific Facts'* by Bruno Latour and Steve Woolgar constitutes a seminal ANT text. *Laboratory Life* aimed to explore science

through a quasi-scientific observational process. In doing so the authors show that knowledge, (i.e. scientific facts) is the resulting construction of a heterogeneous assemblage (Latour & Woolgar 1979). The scientists themselves are discussed as a tribe, complete with their own practices and belief system. *Laboratory Life* was thus identified as an ethnography of science (Law 2004).

Throughout *Laboratory Life*, the beginnings of ANT take shape. The authors' emphasis on the material setting allows inclusion of non-human actors in the discussion. Samples, machines, texts and animals all formed part of the process of knowledge-making along with the scientists (Latour & Woolgar 1979). This introduced the ANT conceptualisation of agency. Additionally, inherent in the description of the process was the interconnectedness of the actors, which would later become the 'network' and 'relationality' aspects of ANT (Law 2004).

This book set the tone for ANT as a theory aimed at explaining moments of durability in the fluid and ever-changing social (Law 1986a; Law 1992; Law 2003; Law 2007a). Another concept, offered in the book, which would later become fundamental to ANT, is that by observing and describing micro activity, you can explain macro concepts, processes and phenomena (Latour & Woolgar 1979; Callon & Latour 1981; Latour 1983). This contrasted with the sociological approaches at the time, which favoured explaining micro societal phenomena by assigning macro concepts (Callon & Latour 1981).

From then on three aims characterized ANT texts; (i) the aim to disassemble the production of scientific fact through the exploration of scientific and technical communities (Latour & Woolgar 1979, 1986; Latour 1983, 1988; Law & Williams 1982), (ii) the aim to show the agency of non-humans (Johnson 1988; Latour 1990, 1992; Callon 1986a) and (iii) the aim to understand knowledge and reality as relational constructions of actors in networks (Latour & Woolgar 1979; Law 2003; 2007a; Mol 1999;).

Over the following years ANT became;

'*...a disparate family of material-semiotic tools, sensibilities and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located. It assumes that nothing has reality or form outside the enactment of those relations.*' (Law 2007a, p2)

As such, it was necessary to undertake a detailed review of ANT writings to discern the commonalities that amount to the fundamental principles of the theory in order to guide the use of ANT in this research. Table 3.1 presents an overview of the fundamental principles of ANT that were adopted to guide this research, from the data collection through analysis to the production of this thesis narrative.

Table 3.1: Principles of ANT: Key Works, Meaning and Application[28] (Source: Author's Own)

Fundamental Principle	Meaning	Methodology	Key Works
Symmetry/ Heterogeneity	Agency (i.e. acting) is not and should not be limited to humans and human-only activity	Observe and account for everything that makes a difference and be consistent in description	(Latour 1983; Callon 1986a; Latour 1986; Law 1986b; Latour 1992; Law 1992; Latour 2005; Fox 2005; Fenwick & Edwards 2010)
Relationality	Actors are connected; they enact each other and the relations amongst them define their existence	Trace associations and connections between actors	(Callon 1986a; Harman 2007; Latour 1994; Latour 2005; Law 1986b; Law 1991b; Law 2003; Law 2004; Law 2007a; Mol 1999)
Multiplicity	There are multiple, intertwining, overlapping realities which are defined by actors and associations	Examine and explain the multiple constructions of realities and identities	(Mol 1999; Law 2004; Law & Mol 2008; Law & Mol 2011; McDougall et al. 2016)
Free association	Rejection of *a priori* dualisms such as the natural/social, micro/macro	By following all actors and tracing all associations the 'messy' heterogeneous collective can be appreciated	(Callon & Latour 1981; Callon 1986a; Law 1999a; Law 2003; Fenwick & Edwards 2010)
Agnosticism	Impartiality towards who and what is acting	No account should be favoured or censored according to the beliefs of the researcher	(Callon 1986a; Law 1986a; Sommer 1996; Callon 2009)
Power	Power is the constructed effect of a heterogeneous network	Deconstruct moments of translation and treason to demystify power and control	(Callon & Latour 1981; Callon 1986a; Latour 1986; Law 1986a; Law 1986b; Law 1991a; Law 1991b; Law 1992; Galis & Lee 2013)

[28] The fundamentals are not presented in a particular order; they are all equally key to using the theory.

Building on this introduction of the origin and fundamentals of ANT research, the following section will review the adoption of ANT research into a wide variety of contexts.

3.3 Development of ANT

This section aims to give a brief overview of the development of ANT across different fields of research before discussing the most relevant ANT studies for this thesis. ANT promotes a fluidity of both methods (Law 2004; Law 2007b), and understanding of the social (Latour 1999; Law 2007). Its theoretical terminologies have been embraced and mobilized by academics across many different contexts and over the years it has developed many names (Law 2003; Cressman 2009).[29]

ANT can be traced into different fields of literature. Latour continued his work on the production of knowledge through his studies of science[30] and over the course of his work he showed how heterogeneity in microcosm can produce macro understandings of scientific facts (Latour & Woolgar 1979; Latour 1983; Latour 1988), before moving to a more abstract level and commenting on the role of science and technology in the society (Latour 1987) and exploring controversy at the interface of science and politics (Latour 2004a).

While Latour's focus remained predominantly on scientific and technical assemblages, the theme of power and control emerged as a focal discussion for ANT scholars from the 1980s to the early 1990s. Key studies aimed to deconstruct and demystify power and acts of control (Callon & Latour 1981; Law 1986b; Callon 1986a; Latour 1986; Law 1986a; Law 1991a; Law 1991b; Law 1992). Subsequently, the majority of later works moved away from discussions of power and control, however, explaining the

[29] Examples include inter alia, The Sociology of Associations (Latour 2005; Boelens 2010), Material Semiotics (Law 2007a), The Sociology of Translation (Callon 1980; Callon 1986a) and Actant-Rhizome Ontology (Latour 1999a).

[30] Though he also produced more generally positioned philosophical texts on ANT (e.g. Latour 1999b; Latour 2005).

development of regulatory control is a core part of this thesis. As such, power and control are discussed later in this Chapter with Section 3.11 providing the ANT definition of power and control and Section 3.12 explaining its construction.

Callon began to use the fundamentals of ANT to study markets (Callon 1998; Callon 1999). This opened up a stream of literature which adopts the conceptual underpinnings of ANT to understand the construction of markets (Garcia-Parpet 2007), the characteristics of markets (Mitchell 2007), the performativity of markets (Callon 2007) and the agency of market devices (Callon et al. 2007). The literature on market studies shares a commonality in that macro phenomena (markets) can be deconstructed into micro actors and actions, and so explained. This approach has been applied in this thesis; the study of control over a market (i.e. Shipping) will be explained by focusing specifically on the actors and actions in the MEPC.

ANT also spread into management accounting literatures stimulating academics to follow the action of accounting calculations and their effects. These studies are noted to be a production of a particular reading of ANT, and a specifically Latourian understanding of translation as transformation, which largely disregards the element of power associated with Callon's (1986a) translation (Justesen & Mouritsen 2011). Translation is a core element in this thesis and will be discussed more deeply in Section 3.12. The application of ANT in management accounting shows that non-humans can have multiple and surprising consequences and once enacted, they assume a level of agency by shaping organisational practice (Justesen & Mouritsen 2011), a useful framing when studying the roles of actors in the development and shaping of regulation.

In terms of less economic and calculative areas, ANT has been used in studies of art, health and education. Examinations of the construction of art, museums and fashion 'looks' have been enabled through the application of the principle of symmetry (Star & Griesemer 1989; Yaneva 2003; Entwistle & Slater 2014). Additionally, ANT has developed quite a presence in studies of Education (Fenwick & Edwards 2010). Similar to the studies of construction of art and fashion, these works gathered traction by 'unsettling' views of what knowledge and learning are by engaging with the principle of

symmetry to understand the agency of objects in education (Fenwick & Edwards 2010). Furthermore, ANT has repositioned learning as a networked affair (ibid) and has shown the evolution of learning as *'the mutual dependence between human meanings and mundane technologies'* (Fox 2005). These literatures reproduce the focus of ANT on objects, and remind users to particularly explore the agency of the seemingly mundane and 'taken for granted' (Latour 1992; Fox 2005; Woolgar & Neyland 2013).

In studies of health, ANT has been used to explore the multiplicity of patient care by tracing the different groups involved in the diagnosis and care of patients (Mol 1999; McDougall et al. 2016), the mutual construction of health through the associations of humans with medical devices (Prout 1996; Lupton 2012), and how new practices can be stabilized and produce unintended effects (Gherardi & Perrotta 2011). ANT has also been employed in a limited number of studies of animal health (Law & Mol 2008; Law & Mol 2011). These studies showed how the multi-level perspectives (i.e. governmental, farming, veterinary) during the foot and mouth outbreak in the UK, produced different realities with individual consequences for the sheep. Ultimately, they point out that reality is constructed through enactments (ibid). Thus, studying the construction of regulatory control is also the observation of the construction of future realities of practice for Shipping.

This section has provided a general review of the applications of ANT in diverse contexts. Broadly speaking, ANT has been used to appreciate the work of (mundane) objects, the consequences of agency in different contexts and acts of construction, e.g. power, facts, realities and markets. Based on the above, this thesis frames development of regulation as the construction of control over the operations of the shipping industry. It will unpack the collective (macro) activity through the identification and study of individual (micro) actors, accounting for the seemingly taken-for-granted sources of agency in the process. The following section moves on to look specifically at the application of ANT in the key areas that link to this thesis i.e. environmental, regulatory and shipping contexts.

3.4 ANT Studies of Environmental Governance, Regulation and Shipping

Due to the appreciation for the agency of non-humans, ANT lends itself to research concerning environmental impacts and governance because accounts of environmental governance become less anthropocentric when ANT is applied. This is evident in ANT studies of markets, particularly those concerning carbon markets (Callon 2009; MacKenzie 2009; Dalsgaard 2013). Such studies have discussed the commensurability of carbon following its displacement from the natural context into economic spheres (MacKenzie 2009; Dalsgaard 2013). While these studies contribute to our understanding of the economisation of nature they can be considered as downstream examinations of the consequences of emissions agreements and reduction approaches. Yet they also justify the application of ANT to follow CO_2, not only as a substance of nature contributing to climate change, but as a *matter of concern* that stimulates political-scientific and regulatory activity (Latour 2004a).

Other studies focus on an environmental actor in order to explore and explain the heterogeneous networks that gather around them. Eden (2009) unpacks the network of governance that lies behind the 'tick-tree' of the Forest Stewardship Council. In following the tick-tree symbol she finds it to be a boundary object circulating through, connecting and shaping a hybrid governance network. She ascribes the network's continued success to the arrangement of hybrid and heterogeneous actors. Egan (2014) examined the attempts of a heterogeneous network to establish water conservation in a University during a drought. The network managed to enrol various actors however it had limited success. As drought conditions abated and the organisation returned to a cost focus the network disassociated having failed to achieve durability by linking its practices to accountability mechanisms. The difficulty in constructing a durable network around an environmental concern was expanded by Jollands et al. (2015) where the authors followed the influence of sustainability on the creation of a network to translate it into a core organisational value. Again the network failed to achieve durability, unravelling in the face of network leakage, external economic developments and cost concerns. These articles represent three stories of self-governance, one successful and two not. The commonality that connects them is the use of ANT to unpack and explain the heterogeneous assemblages that gathered around environmental concerns. By

examining CO_2 as a political-scientific *matter of concern* for the MEPC (Latour 2004a), and following it into the regulatory network, this thesis explores how an environmental issue shapes the output of a durable network and builds on the application of ANT to environmental governance networks.

As this thesis is a study of the development of regulation, existing applications of ANT to regulatory contexts are germane. When applying ANT to the study of regulation Cloatre and Dingwall (2013) suggest reimagining legal space as a socio-technico-legal network where legality is not tied to only humans or intentions. The authors followed pharmaceutical drugs from a developed and strictly regulated market into a less developed country with a low level of market regulation and found regulatory stringency towards the drugs did not differ between markets. As such they concluded that regulatory control can be unintentionally *'..."black boxed" to the point of invisibility*' (Cloatre & Dingwall 2013, p365).

The entangling of governance and control with mundane objects has similarly been explored by Woolgar & Neyland (2013). In their discussion of mundane governance Woolgar & Neyland show objects, not only as agential in an ANT sense, but as sources of politics. They find objects to have their own associated politics, while simultaneously being part of a larger heterogeneous network of governance. These works present the associations of objects with political and legal modes of governance, however, the question of the role that objects play in political governance processes remains. By researching the MEPC as a network responsible for environmental governance of Shipping, the role of mundane objects in a political-technico-legal process can be explored.

In Section 2.9 of Chapter 2, it was observed that key works focusing on the IMO use a variety of different approaches, from Regime and Institutional Theory to the collection, presentation and analysis of data without a theoretical framing. None of the works focused on the IMO utilize ANT, however ANT has been applied in three studies of the Shipping Industry in general. These will be explained in order to delineate the work of this thesis.

Rodon et al (2008) applied ANT to understand inter-organizational information systems (IOIS) in the seaport of Barcelona. Implementation was found to be the result the entanglement of socio-technical actors and a fixed set of factors. Using ANT allowed the authors to follow a technology as the focal actor and to better understand the heterogeneity of practice and thus they created a specific empirical explanation of networked implementation. Chapter 2 illustrated the need for the study of regulatory development and building on Rodon, the heterogeneity of construction, rather than implementation, will be the focus of this research.

Drawing on a core fundamental of ANT, the destruction of the social/natural dualism, Kürner et al. (2015) explored the socio-natural entanglements and shifting power relations interwoven in the development of Arctic Shipping Routes. Although not based on empirical evidence, the authors identify a series of social and natural interdependencies and offer this as a useful sensitisation for future policy work regarding the Arctic as a complex and changing area. Their discussion serves to highlight the need to understand more about the creation of regulation to control environmental impacts. This was similarly emphasised in a conference paper wherein ANT was applied in connection with the associated concept of *market devices* (Callon et al. 2007) to understand the market for Ballast Water Treatment Systems (BWTS) (Harrison 2014). By positioning BWTS as market devices-in-the-making and regulators as market designers, Harrison proceeded to explore the market's reaction to regulatory uncertainty and in doing so highlighted the link between the reactionary behaviours of Shipping and the adoption of IMO regulations.

The articles above deal with heterogeneous implementation, social and natural interdependences, environmental controversy and market activity in times of regulatory uncertainty. However, there remains a lack of understanding of networks of construction, power and agency interdependencies in this particular sector. Thus, this thesis will undertake an ethnographic study of the development of regulation as a creation of control over market activity. In doing so, the thesis aims to apply ANT to understand the network of construction (MEPC) and to engage with conceptualizations of control on a theoretical level.

Having traced the development of ANT into different contexts as part of the framing for this research, the following section focuses on the criticisms of ANT and how these are taken into account.

3.5 Criticisms of ANT

The most complete criticism of ANT was provided in a piece entitled 'Epistemological Chicken' by Collins & Yearley (1992) in which the authors discuss two ANT articles: Callon (1986a) and Latour (1992). The critique is essentially an outright rejection of everything ANT, from the agency of non-humans, the authority of the researchers, the lack of method and the overuse of imagination resulting in a '*sociologically prosaic*' account (Collins & Yearley 1992, p321). Despite such a substantive critique, ANT has been well accepted by many scholars, as can be seen from the diversity of contexts it has been applied, illustrated in the previous section. However, a few limitations and difficulties can be identified.

Whittle & Spicer (2008) argued that ANT provides a valuable framework for the empirical exploration of organisations, however they voice concern that ANT theorists may be defining the properties of objects themselves. ANT theorists, however, see qualities as partly a construction of the researcher and acknowledge the performativity of the theory (Callon 1998; Law 2004), but more so as a result of the relational actions and effects of the interconnected network (Callon 1986a; Latour 1986). Furthermore, the work on multiplicity shows a multitude of realities defined by the actors (see Mol 1999; Law & Mol 2008; McDougall et al. 2016). The job of an ANT study, therefore, is not to define qualities or properties but to listen to, follow the actors and describe in detail (Latour 2005; Venturini 2012).

In his comparison of Activity Theory and ANT as approaches to studying innovations, Miettinen (1999) argues that the vocabulary of ANT loses the individual vocabularies of different fields and results in oversimplification. As this chapter shows, there are a lot of theoretical terms associated with Actor-Network Theory and so there is a danger of losing the language of the actors themselves. Furthermore, there exists an uneasy tension between following the actors and listening to them (Latour 2005; Venturini

2012) but at the same time, *'not simply repeat the analysis suggested by the actors'* (Callon 1986a, p4). As demonstrated in Chapter 2 Shipping has a technical vocabulary. Thus, this study needs to strike a balance between presenting the actors' own language and using the terminologies of ANT to elevate the account to a theoretical level.

Although ANT has been spreading across different contexts, it remains most fully applied in the sciences, management accounting and financial markets (Justesen & Mouritsen 2011; Entwistle & Slater 2014). Using ANT to study fashion models, Entwistle and Slater note a limitation of ANT to be the paradoxical aim to illuminate the associations made between actors who construct their own world, and the exclusion of culture from this treatment, despite its frequent enactment as a part of actor-worlds (2014). Just as Latour (2005) sought to remove divisions between the social and technical and reassemble the social *as* technical and the technical *as* social, Entwistle and Slater (2014) attempt to reassemble culture as a technical and social production. They conclude that ANT relegated culture to an '*ontological fiction*' despite empirical evidence of performative enactments (Entwistle & Slater 2014, p174). They suggest this has been a missed opportunity for deconstructing the effect of such actor conceptualisations and encourage further work to take on slippery concepts, approaching these with the same symmetry as ANT does for other actors.

ANT has been criticized for the use of description and lack of critique (Amsterdamska 1990; Whittle & Spicer 2008). However, in the context of control in the shipping industry, Chapter 2 argued that existing literature on shipping emissions and the IMO are largely critical. Hence, an ANT-informed study that adopts an exploratory and descriptive approach is appropriate to enrich understanding of the MEPC and offers a new perspective on the process of creating regulations.

Taking account of these criticisms is central to the development of this study. Hence, actors shall be followed and described, the vocabulary of the actors and ANT will be combined in the narrative and the principle of symmetry will be used to sensitize this research to all sources of agency.

Additionally, scholars criticize ANT as being a non-unified collection of approaches (Miettinen 1999; Cowan & Carr 2008) that can be methodologically vague (Jóhannesson 2005). Taking account of these the rest of this chapter is dedicated to explaining the ANT concepts applied in this research, which is then followed by a detailed methodology in Chapter 4

3.6 The ANT Toolkit

In addition to adopting the fundamental principles of ANT, presented Table 3.1, a conceptual ANT toolkit has been constructed. This toolkit both formed and framed the narrative of this thesis and its contributions. As such, it is necessary to explain the ANT concepts used, fully and individually. Recognising that ANT does not support attempts to permanently stabilize the social, it follows that ANT itself retains a certain level of fluidity in its own translations through the literature (Fenwick & Edwards 2010). The attempt to define the terminologies of ANT here is not an attempt to stabilize them but rather present the manner in which they have been understood in this research. The concepts presented are: Actors, Networks, Associations and Boundary Objects as ways to explain; Black Boxes and Controversy as ways to explore; and Power, Control, Translation and Treason as the analytical framing for discussing the construction of regulation.

3.7 Actors, Networks and Associations

One of the most fundamental aspects of ANT was the re-imagining of what it meant to act. From the very earliest works of ANT, a major motivation of ANT studies was to ensure that explanations of society included non-humans (Latour 2005). In the words of Latour: '*Without the nonhuman, humans would not last a minute.*' (Latour 2004, p91).

In their early work, Callon and Latour offered a definition for an actor as *'Any element which bends space around itself, makes other elements depend upon itself and translates their will into a language of its own…'* (Callon & Latour, 1981, p286). In *Reassembling the Social*, Latour later expanded and simplified the definition of an actor

as *'...any thing that does modify a state of affairs by making a difference is an actor'* (Latour 2005, p71).

Therefore, anything has the potential to be an actor in ANT. It does not need to have intentionality; it simply has to have an effect (Latour 2005).[31] How actors are identified is clear but there remains the question of how they can be understood. How can we 'know' any more about them other than the simple statement that they are actors? The answer is through the relationality between actors (Latour 1994).

A network is an assembly of actors created by associations which, as a collective, can also be seen as an actor (Callon & Latour 1981). When deconstructing the powerful or 'macro actors' as they term them, Callon and Latour designate actors as networks: *'The best way to understand this is to consider actors as networks'* (ibid, p280). Therefore, we can say that when examining an actor, we are also examining a network, or assemblage, and vice versa (Law 1991b).

Every actor in ANT should be understood, not *a priori* by an assumed inner essence, but by the associations that create and constitute it as a network (Harman 2009). *'Sociology is only lively and productive when it examines all associations with at least the same daring as the actors who make them.'* (Callon & Latour, 1981, p292). A fundamental of ANT is the interconnectedness or relationality of actors (See Table 3.1). The '*...social, for ANT, is the name of a type of momentary association which is characterized by the way it gathers together into new shapes*' (Latour 2005, p65). ANT argues the need to understand how actors associate together and in doing so, how they define each other (Latour & Woolgar 1979; Latour 2005). Indeed, when two actors associate they can be understood as a new entity:

[31] It is important to make a clarification about the terminology Actant. This term was developed later in ANT studies (for example, Latour 1996) and used to denote any non-human actors due to the human connotation for the word actor in English (Latour 1999b). They can be seen as largely interchangeable.

'*You are different with a gun in your hand; the gun is different with you holding it. You are another subject because you hold the gun; the gun is another object because it has entered into a relationship with you.*' (Latour 1999, p179).

In addition to this, associations can add to the durability of a network: the stronger the association, the stronger the network (Latour 1999b). In ANT, durability of associations can be achieved but equally network durability is a temporary state held only as long as the actors and associations are kept together (Callon 1986a; Latour 1986, 2005; Venturini 2009). Associations are the connections through which a researcher must travel in order to understand the social (Latour 2005). Associations, and the networks they create, can therefore be understood as a way to collect and explain data. One must follow the actors and trace the associations (Callon & Latour 1981; Latour 2005).

This thesis takes the MEPC as a focal regulatory network and will trace the actors and associations in order to explain the functioning of the network itself. The concept of an actor, or actant, will be used to identify who and what are involved in creating regulations in the MEPC and to assist in describing their role. Additionally, the idea that actors can represent networks is germane to the exploration of the MEPC as a network constructed partly by smaller networks (i.e. delegations) that capture and represent interests. Equally, using the concept of networks as groups of associated actors allows sub-networks to be identified and the alignment of actors within the MEPC to be discussed.

3.8 Boundary Objects

A boundary object is a particular subcategory of object in ANT literature. It is one that exists in two (or more) networks and links or bridges them (Star & Griesemer 1989). More specifically, they can be described as:

'…objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites…These objects may be abstract or concrete. They have different meanings

in different social worlds but their structure is common enough to more than one world to make them recognizable…' (Star & Griesemer 1989, p393)

Similar to Latour's 'immutable mobiles' (Latour 1987) and Callon's 'mediators' (Callon 1995), boundary objects, although flexible to a certain extent, do not usually change when moving between networks. They do enable actors to work together by providing gateways between networks (Eden 2009) and they can link seemingly disjointed worlds, allowing them to peacefully co-exist, without '*necessarily fusing them into one'* (Callon 1995, p59). In the literature, boundary objects have been seen to connect science and policy by bridging gaps, aligning interests and encouraging cooperation in aid of new approaches (Star & Griesemer 1989; Eden 2009; Fujimura 1992; Gray et al. 2014). Boundary objects can tie together actors with diverse goals and connect them in an implementation process (Briers & Chua 2001). They have also been shown to provide a cohesive symbol around which to gather networks of governance (Eden 2009) and can be linked with attempts at translation (Fujimura 1992) and network growth (Callon 1995).

Boundary objects themselves can be understood as actors. Their role is to connect actors and, despite Eden claiming that they are '*not boundary markers*' (2009, p348), this thesis adopts the view that in their role as gateways between networks, they do indeed delineate network boundaries. In ANT, multiple networks can appear as an unruly mass, difficult to untangle therefore using the concept of boundary objects allows an observer to more easily process and map networks. Understanding this allows an observer to sort through a mess of connections and designate a border between the sub-networks functioning in the overall collective. As the MEPC is a hybrid forum (Venturini 2009) that brings together policy makers and practitioners to produce regulation, the concept of boundary objects will assist in following actors that move between networks and marking out nexus spaces within the Committee overall.

3.9 Black Boxes

'*A black box contains that which no longer needs to be reconsidered, those things whose contents have become a matter of indifference.*' (Callon & Latour, 1981, p285)

A black box is an assemblage of associations or series of connections that have been made durable by heterogeneity and reached a point of stabilization (Callon & Latour 1981; Rydin 2012). Black boxes can contain a silent network, hidden by the acceptability of it as mundane, normal, and even unquestionable (Johnson 1988; Fox 2005; Rydin 2012). The concept of the black box is part of the exploratory ANT toolkit and examining black boxes is the aim of many studies that utilize ANT (Justesen & Mouritsen 2011).

When considering black boxes in a given context, ANT suggests that a certain level of stability is provided by the heterogeneity of the connections that have been boxed up (Rydin 2012) but equally that this stability is temporary: '*Of course, black boxes never remain fully closed or properly fastened…*' (Callon & Latour, 1981, p285). As such a black boxed concept, system, practice or object can be unpacked, unravelled or deconstructed (Justesen & Mouritsen 2011; Rydin 2012). The concept of a black box therefore generates deconstructive studies that are able to open up taken-for-granted devices and practices. It is therefore both a theoretical framing and methodological tool for opening up socio-technical contexts.

This thesis aims to tease apart the collective of actors and processes that constitute a regulatory body and that are black-boxed in regulation. This approach can be complemented by another stream of ANT writing, which positions controversy as moments where things are not-yet-settled (i.e. still unboxed). The next section will explain and describe controversy as another entry mode for deconstructive inquiry.

3.10 Controversy

In ANT, controversies are seen as generative of the social and *'…are part and parcel of the very definition of the social bond*' (Latour 1986, p273). Latour uses controversy as a way to understand the interface of multiple realities between science and politics around ecological issues (Latour 2004a).

The cartography of controversy is a sub-stream of ANT literature devoted to practical guidance for investigation of socio-technical debate (Venturini 2009; Venturini 2012).

Controversies mark a nexus between scientific and political realities (Latour 2004a; Venturini 2009; Venturini 2012), and are defined as:

'...situations where actors disagree (or better, agree on their disagreement)…controversies begin when actors discover that they cannot ignore each other and controversies end when actors manage to work out a solid compromise to live together. Anything between these two extremes can be called a controversy.' (Venturini 2009, p261)

Furthermore, the term controversy is used to denote situations of destabilization where an issue has either yet to be black-boxed (as described above) or has been un-boxed (Venturini 2009). In his explanatory article Venturini (2009) lists the characteristics of controversies and recommends seeking out the most complex set of diverse actors, forming and detaching their associations in harsh conflict in order to find a 'good controversy' in contrast to past, boundless and underground controversies. Once a controversy has been chosen, observation and description is recommended (ibid.).

As with the rest of ANT terminology, controversy has both theoretical and methodological implications:
'*The task of defining and ordering the social should be left to the actors themselves, not taken up by the analyst. This is why, to regain some sense of order, the best solution is to trace connections between the controversies themselves rather than try to decide how to settle any given controversy.*' (Latour 2005, p23)

It is by following moments of controversy, as actors define the world around them that the analyst can begin the job of explaining, though of course it must be acknowledged that in explaining we also construct. The cartography of controversies is a helpful mode of inquiry considering the research aim is to understand a technical and political organisation as it constructs environmental regulations. Chapter 2 explained that Member States, IGOs, IAs and NGOs gather together to negotiate and develop new regulations. It is a space of unboxed negotiation where the controversies, if settled, are

replaced by new ones. Following CO_2 discussions in the MEPC meets the definition of a 'good controversy' as they are current, bounded and observable (Venturini 2009).

In addition to the use of controversy as a guiding heuristic, moments of change are recognized for their potential to open up construction activities (Czarniawska & Sevón 1996). Indeed organisations can be seen to be in a state of constant change (Czarniawska & Sevón 1996); a sort of dynamic ever-flux where the only constants are those which repeatedly re-performed. This line of thinking compliments the concept of controversy and can be used as a framing device for the study of organisations. Both of these streams of thought directed the research and analysis for this thesis.

3.11 Power and Control

Most recent ANT-based literature has moved away from issues of power, however the early studies were concerned with explaining and demystifying the mechanics of power (Law 1991a; Alcadipani & Hassard 2010; Egan 2014) spanning theoretical discussions of power (Callon & Latour 1981; Latour 1986; Law 1992), case studies (Callon 1986a; Law 1986a; Law 1986b) and a combination of both (Law 1991b).

ANT has a specific understanding of power. No actor is assumed to be inherently powerful, instead power is seen as a result or an effect of a heterogeneous network of relations (Latour 1986; Law 1991b; Law 1992; Czarniawska & Sevón 1996). This thesis primarily draws on the work of Law (1986b) and Callon (1986a). In a historical study of control over distance based on examination of the Portuguese Navy, Law (1986b) offers a detailed exploration of power. Callon (1986a) offers an explanation of the construction of networked power by following a group of researchers as they tried to make themselves into an obligatory passage point (OPP) atop a network of mobilized scallops, scallop boxes, fishermen and colleagues. These studies are germane to the conceptualisation of regulatory control. Accordingly, this section details how ANT defines power and control drawing from Law (1986b) while the following section on translation discusses the work of Callon (1986a). Together these studies are taken as a framing to understand the development of regulation for the shipping industry as a

process of constructing control over distance through the actions of a heterogeneous network.

In his deconstruction of the Portuguese Naval control, Law treats power and control as synonymous (Law 1986b). He questions how naval action can be controlled over vast distances and concludes that a heterogeneous assemblage of actors, when durably connected, can produce control over distance (ibid.). By understanding that non-humans are part of a network for control and deconstructing that network he was able to explain how a small number of people in Lisbon were able to purposefully influence events half-way around the world (ibid.). In-keeping with ANT fundamentals, he showed that not only are non-human elements essential to explaining phenomena, but they are an integral part of the production of power:

'*The Portuguese mariner, on a vessel with a cannon, was indeed powerful. The same Mariner, shipwrecked on a beach, was pathetically weak*' (Law 1986b, p253)

From this quote several aspects of power can be understood. Power is not inherent to the actor (in this instance the Mariner), it is a product of (temporary) heterogeneous associations. Additionally, in his own discussions of power Latour emphasises that power only exists when exerted (Latour 1986; Latour 1999b). This element is also present in Callon's definition of a powerful position as the mobilization of other actors. Therefore to be truly powerful in the ANT sense the Mariner would have to be mobilizing the cannon and bending other actors to his will. Latour provides a helpful summary of this aspect of power: '*Either you have it in practice…or you simply have it in theory and you do not have it. What makes the difference between power 'in potentia' and power 'in actu'? The actions of others.*' (Latour 1986, p265)

Thus an actor is made powerful by their associations and those that they can successfully mobilize. In terms of using this concept methodologically, Latour suggests, '*By reconstructing networks…a full description of power and domination may be obtained*' (Latour 1990, p103). In other words, the fundamental work of ANT, following actors and tracing associations, will produce an account of control.

ANT has diverged into many branches, as discussed in Section 3.3, yet very few ANT works have taken up the early notions of power and applied these in contemporary settings. In his study of central-to-local government planning initiatives in Dublin, (McGuirk 2000) draws on the ANT conceptualization to destabilize the notion of power in the field of urban governance from the result of fixed social structures to power as dispersed and composite. His work therefore, is an example of how to locate power in multi-level government networks rather than a way to understand how networks control at distance.

The literature on power deconstructs the 'already-powerful' and shows power and control as the produced effect of heterogeneous associations. However, if we understand a powerful position as a result of a network of actors then there is need to understand how such a position can be created, which is key to this study of regulation. The next section therefore, discusses the sociology of translation, as an analytical framing, which explains how networks build positions of power.

3.12 The Sociology of Translation

The sociology of translation is a stream of ANT that focuses on understanding network growth (Fox 2005). With its distinctive vocabulary, it explains the process of orchestrating a position of control though a series of negotiations. Previous literature surmised that power exists only in its use (Latour 1986) and that a position of power is one from which one actor may speak and act on behalf of many (Callon & Latour 1981; Fox 2005). The sociology of translation offers both a method for understanding, and a vocabulary for explaining how one can achieve a networked position of power (Callon 1986a; Fox 2005). Such a position is achieved by creating an agenda, aligning interests of other actors and mobilizing the actors to the realisation of the agenda (Callon & Law 1982; Callon 1986a; Latour 1999b).

Although the concept has roots in the work of Serres (1974), Michel Callon refined and elucidated translation in his 1986 analysis of researcher attempting to re-populate the scallop colonies of St Brieuc Bay. This work further solidified some of the fundamental principles that already inform ANT. Callon sets out to tell a story of trials, tribulation

and representation. Before he begins the tale, he lays out three principles that guided his analysis:

(i) Generalized agnosticism
(ii) Generalized symmetry
(iii) Free association

While each of these is included in Table 3.1, as translation is a core framing for this thesis, it is useful to revisit them in the context of Callon's work. Under the principle of *general agnosticism*, '*No point of view is privileged and no interpretation is censored*' (Callon, 1986a, p4). Furthermore, the analyst must refrain from judging the positions of the actors or attempting to '*reduce them to a particular 'sociological' interpretation*' (Callon, 1986a, p17).

The second principle, *generalized symmetry*, advanced the ANT application of fundamental symmetry. Not only has Callon applied the same analytical approach across the research context, viewing humans, non-humans, social and technical with equal energy, he also applied the same vocabulary to explain the actors and actions in his narrative. Therefore, it is imperative not only to include non-humans in observations and analysis, but to write about them using the same vocabulary as used for humans. The vocabulary itself does not need to be that of Translation, as Callon states that it can be left to the discretion of the observer (Callon, 1986a, p4).

The principle of *free association* directs the researcher to, *'...abandon all a priori distinctions*' (Callon, 1986a, p4). This principle allowed Callon to follow the fluctuations of alliances, relationships and even identities of the actors and can similarly be used to explore agency in international negotiations that are part of developing regulation.

Taking these principles together, Callon applied them to an examination of three researchers' attempts to trial a scallop-farming device from Japan in a French bay in order to increase the population of scallops. The aim was to get the scallop larvae to

anchor to the collector and thereby protect them from predators and overfishing, allowing them to grow and mature. Against this backdrop, Callon introduces the vocabulary of translation: *problematisation, interessment, enrolment and mobilization*. It should be noted that in practice, not all moments of translation are as distinguishable as they appear once they are written (Callon 1986a).

3.12.1 Problematization

Problematization, the first stage of translation, defines an issue as seen by the problematizers. During this stage, an actor will envision a reality or make a claim as to how things should be. In doing so, they seek to create that reality, define the identities of others and become indispensible in a given context (Callon 1986a). Two examples include the researchers who sought to launch their experiment by binding together scallops, fishermen and colleagues behind one strategy (Callon 1986a) and Electricité de France (EDF) envisioning the electric car as the inevitable future (Callon & Latour 1981; Callon 1986b). During problematization, problems are identified and an Obligatory Passage Point (OPP) is created, whereby the previously identified problems can be solved only if all actors travel through the Passage Point together.

In the case of the researchers, they were able to translate their interpretation of the will and desire of the other actors into a plan that would benefit themselves. To be the OPP or to channel actors through an OPP by building a network of associations is to hold a position of power (Latour 1983). After problematization, the problematizers must set out to achieve the reality they envisioned (Callon 1986a). At this early stage, the problematization can be either accepted by the other actors or rejected (Callon 1986a). The transition from problematization to interessement is uncertain and can meet serious resistance from other actors.

3.12.2 Interessement

In order to ‘interesse’ other actors, the problematizers must align actors with their agenda and distance them from other possibilities:

'*For all the groups involved, the interessement helps corner the entities to be enrolled. In addition, it attempts to interrupt all potential competing associations and to construct a system of alliances.'* (Callon 1986a, p10)

This presents one way for a problematizer to 'interesse' other actors, however this is predicated on the assumption that they must cut off alternative associations. Another possibility is that the problematizers make their own associations durable by black boxing connections they forge i.e. how much they can stabilize relations as taken for granted. Methods for interessement include force, seduction, or in some cases, the actors desires are already aligned and devices are often used to try to stabilize this statement (Callon 1986a).

3.12.3 Enrolment

Enrolment is the stage when the actors assume the roles assigned to them by the problematizer and become part of a network (Callon 1986a). Enrolment is achieved if interessement is successful (ibid). Indeed the conceptual distinctions between these stages appear to blur easily. '*To describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed.*' (ibid, p10)

3.12.4 Mobilization

The final stage of translation is mobilization. This occurs when all of the allies are mobilized and the network moves as one towards the realization of the problematization (Callon 1986a). In ANT, it is also a time when one actor or a few may represent, speak and act for many (Callon & Latour 1981; Callon 1986a). One actor, or a small group, have problematized reality, aligned and enrolled actors and placed themselves atop a network of mobilized actors. Thus, the problematizers assume a position of control and see their ideal made real. They have silenced the many and instead control and represent them.

In summary, translation is a process of manufacturing a position of control through a series of moments (Callon 1986a), and can be used to explain how a micro actor becomes a macro actor, in other words, how the weak and individual become powerful networks (Callon & Latour 1981; Fox 2005). One actor or a group of actors create an ideal or highlight an issue, persuade other actors to align with their vision, build a network of connections by assigning roles, all the while distancing their chosen allies from alternatives before finally mobilizing the controlled network.

The concept of translation has recently been supplemented by a shadow vocabulary of treason, which is also a major part of the toolkit of this thesis. The next section elaborates on this development.

3.13 The Sociology of Treason

The concept of treason manifests in the literature in two relatively distinct ways. This section will explain both the original application of the term, named treason by Dissidence (adopting terminology from Callon 1986a) and the later evolution of it into the Sociology of Treason (Galis & Lee 2013). As treason is an offshoot of translation, the principles introduced in Section 3.12 still apply.

In Callon's seminal article on translation (1986a), he viewed treason as a kind of network leakage. He names the scallops as treasonous and 'dissidents' when they do not anchor to the collectors. However, it could be said that this definition hinges on seeing a successful translation, which Callon admits there was not in that case. Therefore, if the scallops were never part of a mobilized (successfully translated) network, then the action of new larvae not anchoring should not be seen as betrayal (treason) as Callon terms it but instead as a failing of the researchers to make a durable network. The first scallops did anchor however the later scallops did not. This means that treason, according to Callon, is an actor falling out of the network and rejecting the problematization.

Galis and Lee (2013) introduced the sociology of treason as a full shadow vocabulary to translation building on the notion of rejecting a problematization. In their historical case

study of attempts to add disability provisions into the construction of the Athens Metro system, the authors provide a narrative detailing the interplay and struggles between two networks, however they focus on the unsuccessful actors. Rather than deconstructing the process of achieving strength, the authors focus on explaining the construction of weakness (Galis & Lee 2013). The authors offer this vocabulary to bring further balance to the analysis of *'power accumulation, network building and stabilization'* (ibid, p155). In doing so, they also extend the concept of power, or indeed powerlessness as a temporary state constructed by the actions of a heterogeneous network (ibid). Guided by their own vocabulary, the authors were able to explain the *'disintegration of non experts'* (ibid, p156) from the construction of policy related to accessibility of the Athens metro system.

Mirroring the sociology of translation, there are four moments of treason. These are *distortion*, *estrangement*, *rejection* and *disruption*. Each of these will now be taken in turn and explained.

3.13.1 Distortion

Distortion is the re-problematization of one network's problematization by another network. The distorting network is attempting to reimagine their own ideal, one that makes the first problematizers and their network dispensable and irrelevant (ibid).

3.13.2 Estrangement

The next moment of treason is estrangement. In this context, the aim is to use devices to produce power asymmetries. '*A successful estrangement falsifies a problematization, substantiates a distortion and continues the severance of associations*' (ibid p162). Estrangement is the process of breaking down the relations in the network. It is the process of unraveling a competing group and making it weaker.

3.13.3 Rejection

Rejection is achieved when estrangement is successful (Galis & Lee 2013). The *'severing of an association becomes a rejection'* (ibid, p165). The devices of

estrangement, those placed as obstacles in the relationships between actors in the network, are tested and found to be insurmountable (ibid). The process of breaking connections has, at the moment of rejection, rendered alliances disassociated.

3.13.4 Disruption

The final moment of treason is disruption. It occurs when '*the disrupted actors are made into invisible Others by those few actors who succeed in mobilizing their agendas and making them dominant and representative*' (Galis & Lee 2013, p168). In their case study, this amounted to the group of disability advocates being locked out of the discussions and silenced. A successful process of treason, therefore, can be taken to explain how one network triumphs over and weakens another into silence and irrelevance through systematic connection breaking and barrier making.

3.14 Translation, Treason and Networks

In summary, translation is the process of an actor or group of actors building a network whereas treason by dissidence is when actors leave this network, i.e they fall out of the state of being mobilized. The sociology of treason, however, is when one network breaks down another network. It is important to note that this is not a simple process and the network being deconstructed may fight back, as Galis and Lee found (see p166-168 Galis & Lee 2013).

In connection with these studies three possible network states can be identified; network formation (translation), network leakage (treason by dissidence) and network power struggles (the sociology of treason). However, none of the translation and treason literature addresses network co-existence. Furthermore, translation represents the creation of a network and treason the disruption of one. Nothing is said about the existence in-between or indeed how interests of conflicting networks can be brought into a cooperative alignment. This thesis will apply these vocabularies to understand the MEPC as an existing network that has already achieved a level of durability beyond those studied in the literature (i.e. the networks in Callon 1986a; Galis & Lee 2013; Egan 2014; Jollands et al. 2015). Using these repertoires allows analysis of the

construction of power and influence and, if used in conjunction, the terminologies bring a balance to analysis and narrative.

The conceptualization of control over distance (Law 1986b) and the construction of a networked positions of influence (Callon 1986a) or rejections (Galis & Lee 2013) are also taken as a base from which the thesis launches an extended exploration of contemporary regulatory control-making overall.

3.15 Conclusion

This chapter presented the origin, fundamentals and development of ANT and discussed some criticisms to sensitize the research approach. It has explained the core concepts as ways of explaining (actors, associations, networks, boundary objects), ways of exploring (black boxes, controversy) and ways of understanding (power and control, translation and treason).

In summary: ANT '*might be better considered as a sensibility to materiality, relationality, and process'* (Law 2004, p157). Its aim *'...is simply to extend the list and modify the shapes and figures of those assembled as participants and to design a way to make them act as a durable whole.*' (Latour 2005, p72). It was selected to guide this research for the following reasons:

(i) Its inclusion of non-human agency
(ii) Its deconstructive approach to power, control and networks
(iii) Its descriptive and exploratory capabilities
(iv) Its suitability to application in scientific and technical communities
(v) Its applicability in different contexts and particularly to controversies

Chapter 2 showed that the existing literature addressing shipping regulations and specifically regarding the IMO lacks depth of detail on the process of developing regulation and neglects engagement with the MEPC as a network consisting of different actors. The aim of this study was to extend and modify understandings of the MEPC,

the actors and processes responsible for developing control and in doing so, to contribute to general conceptualizations of control. In conclusion, ANT appeared to be the most suitable theory for undertaking an ethnographic study of the MEPC since it would simultaneously account for the influence of non-humans in the socio-technico-political community whilst allowing the construction of control to be explained.

4. Methodology

Following on from Chapter 3, this chapter presents and discusses the methodology of the research project. As Actor-Network Theory is partly theoretical and partly methodological (Latour 1999a; Jóhannesson 2005; Lukka & Vinnari 2017), this chapter both offers an account of the methods for data collection and analysis but equally should be read as an extension of Chapter 3.

ANT provides researchers with a conceptual toolkit for deconstructing and understanding the social. However, *'there is no single actor-network theory, but a variety of approaches'* (Cowan & Carr 2008, p151) and as Jóhannesson (2005) points out, there is little guidance for researchers on the use of ANT. What is given is seemingly common sense advice such as such as *follow the actors*, *trace associations* (Latour 2005), ' *"just look at controversies and tell what you see"* ' (Venturini 2009, p 259)[32] and a set of fundamental principles that should be naturalized by the researcher (see Table 3.1 in Chapter 3). The simple advice above combined with the complex and nuanced principles make for tricky implementation in practice. ANT leaves data collection choices predominantly at the discretion of the researcher and provides little assessment of methods. The main focus of ANT authors is how well the principles of ANT are embraced during research. With particular reference for studying controversies Venturini provides seven recommendations (Venturini 2012). These are more of a consolidation of the advice and principles of ANT, rather than directives to collect certain forms and amounts of data in certain ways. As such, I will return to these recommendations in Section 4.13 as a way to reflect on the methodology presented in this chapter.

The chapter opens with the research questions then goes on to explain the ontological and epistemological underpinnings of the research. The majority of the chapter is then dedicated to explaining the gathering of four types of data: observational, photographic,

[32] In his article, Venturini recounts this quote from Bruno Latour when he was asked for instructions on how to explore controversy.

interview and documentary. From there, the analysis and presentation of the data is described along with the ethical considerations of this study. The chapter concludes with some overall reflections on the methodology.

4.1 Research Questions

After undertaking a review of Shipping emissions, regulation and ANT literatures (Chapters 2 and 3), the aim of this research became to observe and explain the process of developing new regulations aimed at controlling and reducing CO_2 emissions from the international shipping industry. In ANT terms, the research aim was *to explore and disassemble the IMO MEPC as a network of actors and associations that attempt to construct control over distance and then reassemble them into an explanatory narrative.* From there, this research aim was then translated into two core research questions:

(i) What is the IMO MEPC? In other words, what actors and associations constitute and perform this network?
(ii) How does the IMO MEPC work? Or, by what processes does this network develop regulatory control?

Chapter 2 showed that while criticism for the existing regulations abounds, there is little understanding of the construction of environmental regulation or the actors and associations that make this possible. Arguably, the MEPC has been black boxed in current studies of maritime regulation and the questions above allowed the research to open it up for exploration through data collection. As such, this study aimed to provide an ethnography of regulation.

Traditional ethnographies involve the researcher immersed in the field for periods of weeks, months or years (Van Maanen 2011; Corson et al. 2014; Campbell, Corson, et al. 2014). Given that MEPC only converges for a five days once or twice a year, issues arise regarding how to engage deeply enough with network to create an ethnographic account.

'Event Ethnography' has recently emerged as a way to resolve the tension between the need to study global governance meetings and the time constraints of these meetings (Campbell, Hagerman, et al. 2014; Campbell, Corson, et al. 2014). These works demonstrate that organisational ethnography is possible in short bursts and that international events provide sites to explore actors, networks, boundary objects, scientific and political assemblages and ultimately a way to understand international governance (Gray et al. 2014; Campbell, Corson, et al. 2014; Campbell, Hagerman, et al. 2014). Framing MEPC meetings as events in a regulatory cycle justifies the observation undertaken as part of an ethnography of the MEPC.

Additionally, to achieve ethnographic depth, multiple data collection methods were used to assemble a heterogeneous collective from which to draw insight. I supplemented observation with interviews in order to fill gaps, make clarifications and to reconstruct parts of the process that could not be directly observed. Rather than just analysing their contents, I treated documents as actors in the network drawing on the work of Cooren (2004). I followed them during and in between meetings, understanding them as representational *spokespersons* (Latour 2004a). I took photographs during the short periods of observation with the initial intent to supplement the observation notes and insert into the thesis narrative. However, they also provided a way for me to revisit the environment in between meeting sessions, if only in a limited sense.

The next section will explain the ontological and epistemological underpinnings of this study, and in doing so will position this thesis as a constructed account of control created by the actions and associations of the researcher and the heterogeneous data (Law 2004).

4.2 Ontology and Epistemology

Each theoretical perspective is framed by an understanding of ontology, i.e. '*what is*' and epistemology, i.e. '*what it means to know*' (Crotty 1998, p10). The key ontological and epistemological assumptions of ANT are *Symmetry, Heterogeneity, Relationality and Multiplicity,* (see Table 3.1 in Chapter 3).

As discussed in Chapter 3, the seminal text of ANT, *Laboratory Life*, reimagined epistemology. Through their examination of the production of facts Latour and Woolgar (1979) demonstrated that knowledge is a produced effect of a heterogeneous network. In doing so they demolished the barriers between the natural and the social that had previously been a key feature of sociological research (Law 1999a). Latour (2005) moved from scientific knowledge to reassemble his own definition of 'social' as heterogeneous, relational and one in which agency is the act of effecting, changing, shaping regardless of its source. We can therefore see that the explanation of knowledge as a production of heterogeneous relations moved to an explanation of reality as the same. ANT is relativistic (Latour 1996) and considered to be a relational ontology (Asdal et al. 2007; Harman 2007). ANT thinkers reject the assumption of inherent properties and *a priori* distinctions (Callon & Latour 1981; Latour 1996). Instead, they seek to understand actors and networks through their constituent relations i.e. associations (Harman 2007; Latour 2005). Under ANT, knowledge and reality are built and shaped by collective agency and socio-material associations.

The great controversy of ANT is less about its constructivism and more the equal footing that objects are given with humans (Harman 2007). Some describe ANT as ontologically flat as it brings everything to the same level, human or not. However, it is more accurate to see ANT as ontologically *symmetrical* (Callon 1986a; Lukka & Vinnari 2017). ANT does not suggest that everything is the same, that there is no such thing as difference, instead it rejects the idea of inherent difference and encourages researchers to analyse *all* in the same terms (Law 1992).

The ontological base of ANT was extended by the work of Annemarie Mol and John Law as they added the element of Multiplicity which is the acknowledgement that reality is multiplicitous and these multiple realities can overlap, coincide, conflict and depend on each other (Mol 1999). This was first shown by Mol in her case study of three productions of anaemia; clinical, statistical, pathophysiological. Mol showed that anaemia, rather than being plural, exists in multiple:

'*It is not as if there were separate entities each standing apart in a homogeneous field. So anaemia is multiple, but it is not plural. The various anaemias that are performed in medicine have many relations between them. They are not simply opposed to, or outside, one another. One may follow the other, stand in for the other, and, the most surprising image, one may include the other...Alternative realities don't simply coexist side by side, but are also found inside one another.*' (Mol 1999, p85)

Multiplicity reinforces the relational ontology of ANT and allows us to see that seemingly individual realities are collectively created (McDougall et al. 2016; Mol 1999; Law 2004; Law & Mol 2008; Law & Mol 2011). Power in ANT is also the production of collective heterogeneous associations (Latour 1986; Law 1986b). It is not considered inherent to the actor (Callon & Latour 1981). Neither is it an ethereal pool on which actors can draw, it is the result of a network of connections mobilized to the will of an actor (Callon 1986a; Latour 1986; Law 1986b).

From the above we can see that ANT is a theory that conflates *what is, what is known, what acts,* and *what influences* into one nuanced approach based on the adoption of the fundamentals offerings of the theory and its proponents. Hence, this thesis can be seen as the knowledge construction of a heterogeneous assemblage of actors; field site, participants, research materials, and myself. The following section will now explain the initiation of the fieldwork.

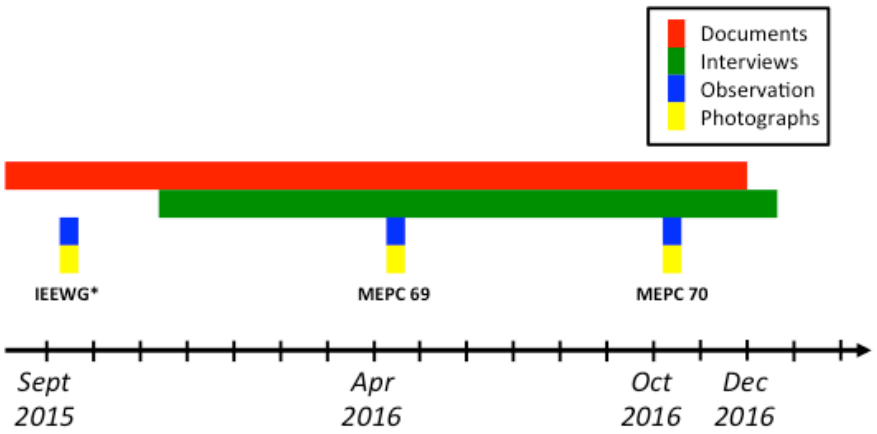
4.3 Overview of Data Collection

Moving from reviewing literature to considering fieldwork involved some initial planning. With regards to qualitative research, planning in advance but avoiding the production of a blueprint is advised (Mason 2002). Additionally, ethnographies cannot be pre-scripted and must develop in the field (Neyland 2007). Instead a research strategy should be adapted and shaped over the course of the fieldwork (ibid). Furthermore, making specific decisions in advance of fieldwork, particularly in regards to data collection methods is not suitable for studies that are qualitative, exploratory and where rich description is the intent (Miles et al. 2014). Drawing on these insights, I decided to undertake observation, interviews, gather relevant documents and take

photographs. However, I made no pre-determination of what exactly to observe at meetings, how many meetings to observe, who to interview, what photos to take, what documents to collect or when the fieldwork would end. It was more important to focus on *following the actors* and make choices that were guided by, *'the practice, process and context of the research itself'* (Mason 2002, p24).

Data was collected from September 2015 to December 2016. Although separated into distinct sections in this thesis for the sake of clarity, the different data collection methods were carried out concurrently. During this time, I attended three MEPC meetings: A full intercessional Working Group meeting held on the 9th-11th of September 2015, MEPC69 (in full) held from the 18th-22nd of April 2016 and finally three days of the five day MEPC70 meeting, held from the 24th-28th of October 2016. Photographic data was taken during the meetings. The first interview was conducted on the 12th November 2015 and the last interview was conducted 16th December 2016. Over the course of these months 36 participants were interviewed and documentary data was gathered starting from just before the Intercessional Working Group (IEEWG) to just after MEPC70. Transcribing, note writing and data analysis also took place during the gathering phase and then continued after the conclusion of the fieldwork. Figure 4.1 visually represents the data collection during fieldwork and in connection to MEPC meetings.

Figure 4.1: Fieldwork Activity Timeline



*Intercessional meeting of the Working Group on Further Technical and Operational Measures for Enhancing Energy Efficiency

Figure 4.1 shows that there were months between observable meetings. As such the data collection had to be spread out over 15 months in order to observe enough meeting days to create this ethnographic account. Interviews were carried out and documents were gathered and analysed between meetings. Although the data collection period started in September 2015, MEPC68, which occurred in 11th-15th of May 2015, has been included in this ethnographic account. This was accomplished by analysing MEPC68 submissions and a transcript of the MEPC68 Plenary discussion. Therefore, while the *data collection period* was from September 2015 to December 2016 the *data timeframe* focused on in this thesis was the period from May 2015 to December 2016. In the following section I will explain how I gained access to the IMO MEPC.

4.3.1 Gaining access: Opening the Black Box

The research was heavily dependent gaining access to the IMO. Gaining access can be one of the most difficult steps in ethnographic research (Bryman & Bell 2007). In this case, obtaining access to the research site was possible through a 'gatekeeper' (May 2001, p60). As part of my background research and familiarization with the issue of shipping emissions I attended a conference concerned with the environmental impacts of current and future shipping activities in June 2014. I aimed to make connections with members of the shipping industry/community in preparation for undertaking fieldwork.

As a result of attending the conference, I met a representative from a Consulting Organisation (hereafter CO) to the IMO. This person offered to register me to attend an IMO meeting. When my project reached the fieldwork stage, I accepted this request and was registered for the IEEWG in the IMO in September 2015 with a CO delegation. Gaining access was therefore a combination of a strategic plan, good luck and opportunism. Indeed, while gaining access to the IMO meetings was largely facilitated by this key contact, I later found out that negotiating the meetings and making contacts for interviews during them was more of a challenge.

From the first intercessional Working Group meeting, I went on to attend MEPC 69 and 70 with the same consulting delegation in April 2016 and October 2016, respectively. While it is possible to attend the IMO as an individual observer, attending as a registered Delegate afforded specific advantages. Firstly, documents that are submitted to meetings (for example, proposals) are only publically available after the meeting has passed.[33] Being registered as Delegate gave me full access to documents submitted in advance of the meetings. I was therefore able to download, read and familiarize myself with the main arguments of the submissions in preparation for observing the meetings. This made it easier to make sense of the complexity of the negotiations. Secondly, being registered with a delegation removed the possibility of observation being denied. The IMO meetings are held in private (IMO 2010). At the start of each meeting the Secretariat notifies the Committee of individual observers and then asks if the Committee has objections to the observers. In the three meetings attended, no observers were rejected but given the importance of this level of access to the research project, attending with a Delegation presented a privileged position. Additionally the other Delegates on the CO helped me make further contacts by making some initial introductions.

Finally, by being registered for a meeting as a member of a Delegation, I had access to the official online audio recordings of Plenary discussions, which are made available after the meetings. Listening to these meant fieldwork notes for Plenary discussions

[33] They are accessible by registering an account with the online IMO document database (IMODOCS).

could be refined and enhanced. More importantly, during data collection a proposal submitted to MEPC68 emerged as a key part of the data. Despite my focus being MEPC69 and 70 I was able to analyse the proposal and then use the audio recordings from Plenary to follow the submission in the discussions at MEPC68.

4.4 Observation at the MEPC meetings

ANT is derived from an ethnographical approach involving observation to explore and assemble and account of the social (Latour & Woolgar 1986; Law 2004). Thus, the choice was made to undertake observation at the meetings in the IMO Headquarters. In total eleven days were spent observing the meetings.

In the MEPC, there are three agenda items relevant to controlling and reducing emissions from ships:

- 'Air pollution and energy efficiency'
- 'Further technical and operational measures for enhancing the energy efficiency of international shipping'
- 'Reduction of GHG emissions from ships'

The Agenda Item on 'Air pollution and energy efficiency' pertains to the EEDI and SEEMP and given that these are established regulations that have been discussed in the literature (see Sections 2.7.2 and 2.7.3) I narrowed my focus to the other two agenda items. The dates, days and focus of my observation are presented in Table 4.1.

Table 4.1: Observation at IMO Meetings

Meeting Type	Meeting Dates	Days Observed	Agenda Item(s) Followed
Intercessional Working Group (IEEWG)	9th – 11th September 2015	3 of 3	6. Further Technical and Operational Measures for Enhancing Energy Efficiency of International Shipping
MEPC69	18th – 22nd April 2016	5 of 5	6. Further Technical and Operational Measures for Enhancing Energy Efficiency of International Shipping 7.Reduction of GHG Emissions from Ships
MEPC70	24th – 28th October 2016	3 of 5	7.Reduction of GHG Emissions from Ships

The IEEWG was focused only on discussing the Agenda Item: Further Technical and Operational Measures for Enhancing Energy Efficiency of International Shipping. At MEPC69, I observed the meeting in full (there were 21 agenda items) but particularly focused my attention on Agenda Items 6 and 7. By MEPC70 I focused on Agenda item 7 only in both Plenary and the Working Group (hereafter WG). The MEPC discussions under Agenda Item 7 concerned new approaches to reduce CO_2 emissions and were deemed the most pertinent to the exploration of the construction of control over Shipping emissions.

I began my observation by attending the IEEWG held at the IMO Headquarters on the 9th-11th of September 2015. Intercessional Working Group meetings differ to the MEPC sessions as they include only a sub-network of actors dedicated to the particular agenda item under discussion and take place in smaller Committee rooms than the Plenary Room. Nevertheless, this meeting provided me with a view of the actors and processes and allowed me to prepare more thoroughly for attending future MEPCs. During this intercessional, I focused mostly on observing rather than securing interviews, knowing that I would need to return to the field site for MEPC69 and would have a clearer focus

as to the content of interviews. Nevertheless, at this meeting I met four individuals who would later become interviewees and who would also help to arrange further interviews. At MEPC69 and MEPC70 I focused both on observing the process as well as securing further interviews. By this point, the interviews were necessary to expand on parts of the process that were not directly visible and for clarifications (see Section 4.7 for further discussion).

During observation across all meetings, I followed the actors and the action. In line with ANT ontological and epistemological underpinnings, while I was observing, I was also constructing the account of the network through my note-taking, conversations with Delegates and contact-making activities. Essentially, I was building my own heterogeneous network of participants, research materials, documents etc. Thus the approach to observation was '*participant-as-observer'* in more general scholarly terms (Fulcher & Scott 2011 p83; see also Burgess 1984 p81). Initially I had considered carrying out conversational interviews in the margin times of the meetings in addition to observing (Arnould & Wallendorf 1994), but decided against this upon attending a meeting. It was nearly impossible to simply observe during break times. If I approached Delegates and introduced myself they would begin to ask about my research rather than continuing their conversations. As I became more familiar with the meetings I began to appreciate that break times are still working times for Delegates. They use this time to make new contacts, discuss the negotiations, and share new ideas (see chapter 5 for further discussion). Being aware of these circumstances, I decided that it seemed most pragmatic to make contacts and ask for interviews with individuals outside of these intense meeting times.

During the meeting discussions, I took continuous substantive handwritten notes (Burgess 1984; Law 2004). The notes were unstructured, largely freeform and in addition to capturing the content of the discussions they included short asides and raw reflections on the meetings. Discussions carried out in Plenary are recorded and the audio is made available to registered Delegates, however WG discussions are not recorded. It was therefore important to capture the discussions in WGs as fully as possible.

In his discussion of developing relationships during participant observation, Burgess states that *'The participant observer needs to blend into the situation if observations are to be made of the participants in their natural settings'* (Burgess 1984, p92). Echoing this, during the first meeting, I made the decision not to attempt to take notes during breaks and meal times as it felt exceedingly conspicuous and somewhat impractical (coffee breaks were mostly spent standing). When the breaks ended I quickly wrote down any significant observations, thoughts or questions that had arisen.

When taking notes I drew on the advice of Burgess (1984, Table 4.2, p96) and adapted his nine dimensions of data collection to reflect my application of ANT by aiming to capture Time, Space, Actors, Action, Questions and my own Reflections. These allowed me to take notes in alignment with the fundamental principles of *heterogeneity* (Law 1992) and *symmetry* (Callon 1986a). Furthermore, a main focus was writing an account of the interventions[34] during WG negotiations, which would allow me to analyse these discursive processes. I wrote my notes in three A5 sized notebooks, using a separate notebook for each meeting and I used my laptop for a few hours during one WG meeting at MEPC70. My notes totalled 309 A5 pages (handwritten) and 11 A4 typed pages (see Table 4.2 below).

Table 4.2: Observation Data

Meeting	Days	Notes (A5 Pages)
IEEWG	3	95
MEPC69	5	114
MEPC70	3	100/11*
Totals	11	309/11*

* Additional 11 pages were A4 typed single line spaced.

In addition to the observation notes, I was very kindly given copies of verbatim Plenary transcripts from MEPC68, 69 and 70 from some other researchers attending the MEPC

[34] Intervention is the term used in the IMO to denote the moment when a Delegate speaks for their Delegation during the discussions.

meetings in return for my notes on the Working Group at MEPC70. This meant that I was able to use audio recordings from Plenaries, transcripts and my notes to analyse the negotiations. The next section reflects on the method of observation and some limitations and difficulties I faced in the field.

4.4.1 Reflections on Observation

There were two main difficulties with observation and two notable limitations. The first difficulty concerns note taking. Attempting to follow a spoken negotiation for hours by taking handwritten notes was difficult and so naturally there were some gaps. The Plenary audio recordings and the transcripts from the researchers allowed me to enrich my notes of the Plenary discussions but as the WGs were not recorded I was reliant on my notes to write up the data.

The second difficulty related to the act of observing itself. The discussion sessions lasted hours and required complete focus. For the sake of progress break times were often sacrificed by the Chairman, particularly in WGs. Equally, the start and end times of WGs were extended. Interventions can be vague, technical and complex. At certain times the discussion in WGs started to diverge into two simultaneous lines of argument. During these times Delegates had to make interventions to request clarifications. Combining these factors with the sheer length of the discussion made the act of observing and note-taking very intense. It is therefore important to consider that some of the action or nuances of the process may not have been recorded and accounted for. Indeed, in his own account of ethnography, Law discusses feeling overwhelmed by the intensity of the activity. He reconciles this by acknowledging that it is impossible to capture everything: '*Too many realities – and representations of realities – were being enacted*' (Law 2004, p108) and suggesting that ethnographers must '*tune in*' to the field and discriminate between what is captured and what is not (ibid).

The third difficulty relates to time constraints. As discussed in Section 4.1 traditional ethnographies are deeply immersive (Van Maanen 2011; Corson et al. 2014), for example Latour spent two years observing in a laboratory, collecting the data with which he would produce *Laboratory Life* (Latour & Woolgar 1979). By undertaking an

ethnography of regulation, I aimed to collect a rich data and so decided that the best resolution to the time constraints of the meetings was to attend multiple meetings. The initial plan to observe IEEWG and MEPC69 was adapted and fieldwork was extended to attend MEPC70 in order to enrich my data to the point where a full description of the network was possible (Venturini 2009). At the same time, the limited contact with the field itself reduced the risk of '*going native'* (Lukka & Vinnari 2017).

A limitation of observation of the MEPC was that the Plenary discussion is held throughout the week however there can be up to five additional Working Group discussions being carried out simultaneously. This was an issue only in that it involved a prioritization of which Agenda Item to follow. As explained in Section 4.4 there are three agenda items that pertain to emissions from ships. During MEPC69 there was only one WG relevant for my focus and by MEPC70 when there were two simultaneous WG on relevant agenda items, I had narrowed my focus and attended the WG on Reduction of GHG Emissions from Ships.

Nevertheless, the IMO MEPC raises the issue of simultaneous discussions for observation as a method. This issue has been faced by other researchers when trying to follow international governance events and a new approach titled *Collaborative Event Ethnography (CCE)*, whereby a team of researchers undertake observation in collaboration, has arisen to deal with the issue of simultaneous events under a collective banner (Campbell, Corson, et al. 2014; Campbell, Hagerman, et al. 2014; Gray et al. 2014). Although it was not possible within the context of this research, this approach may therefore be suitable for future studies of similar regulatory meetings.

The second limitation was that some parts of the regulatory process were not observable as they occur beyond the parameters of the MEPC. The submissions to the MEPC emerged as one of the most important parts of the process. However these submissions are created and submitted weeks before a meeting. They are drafted by Delegations and groups of Delegations through the use of emails, conference calls, conversations at other international regulatory fora or events and in-person meetings. Since the submissions were emerging as key data for my narrative I chose to reconstruct what I

could not observe by using interviews with Delegates. By doing this I was able to capture and explain the process of creating submissions, which is presented in Section 5.3.3 of Chapter 5. The process of interviewing will be discussed in section 4.7. The next section addresses the choice to take photographs in the field site.

4.5 Photographs

Taking photographs as part of ethnographic fieldwork is commonplace (Pink 2013). In ANT research photos are used as a visual aid to illustrate details of the network and actors being described (Latour & Woolgar 1979) or to guide the reader through the narrative (Latour, 1999b). Other ANT scholars make use of photographs to present the reader with a visual image of the object of focus (MacKenzie 2009; Rydin 2012; Law & Mol 2008). Echoing these approaches I took photos in the IMO Headquarters using an iPhone in order to use them in the narrative to guide the reader through the spaces of the IMO MEPC, the structure and layout of rooms and any particularly important objects. I sought permission to take photographs through email. In response I was told that being registered as a Delegate allowed me to take photographs and I was also sent a zip file of 40 official IMO photographs. Over the course of the three meetings I took 171[35] photos.

4.5.1 Reflections on Photographic Data

Photographs were not used as a completely separate data source in this research. Some scholars argue that photographs can capture and present detail that can, '*elude even the most skilled wordsmiths*' (Prosser & Schwartz 2003, p116). As previously stated my initial plan was to use photographs to enhance detail and to aid the reader in the final narrative, however I found the photographs helpful when constructing description. MEPC meetings last only days and as it was not practical to visit the field site in between meetings, photographs provided me with a way to visually revisit the field site as often as necessary during analysis and write up. By reviewing the photographs in conjunction with my observation notes and other data forms when analysing data and writing up the thesis I was able to better recall the field site and observe details that

[35] Many of these photos were of the same object or room but from different angles or levels of zoom for detail.

were not possible to note down at the time (Fetterman 2010). Although I took many photos I have only presented a small illustrative sample in the thesis, however I did not experience any particular difficulty taking and using the photos.

4.6 Documents

Research of 'literate societies' (Atkinson & Coffey 1997) must take account of how texts feature (Silverman 1993) and in the case of ANT, the agency of the texts themselves in organisations (Cooren 2004). Documents were a vital source of data for this study. This section explains why and how documents were collected and analysed in this research.

The IMO itself was brought into existence by a key document - the Convention on the International Maritime Organization (1948) and its Rules of Procedure are presented along with the Convention text in the Basic Documents of the Organization. In advance of every meeting submissions are uploaded to the IMO's online database (IMODOCs). Exploration of this database revealed that there is a vast collection of documents including, submissions, reports, circulars, j-papers, resolutions, guidelines etc. Additionally, observing the meetings showed me that the negotiations are captured in the official reports which are reviewed, line by line, on the last day of meetings. Hence, these meeting reports highlight the importance of documents to the workings of the MEPC. After making these observations I began to understand the IMO, and by extension the MEPC as a 'self-documenting' community and made the decision to closely follow texts as part of my ethnography of regulation (Atkinson & Coffey 1997). Hence, I focused on analysing the content of the texts themselves, treating them as *spokespersons* (Latour 2004a) but I also began to analyse their role(s) in the overall process (Cooren 2004) and build up an appreciation of the collective infrastructure of documents.

When collecting and analysing documents it became important to appreciate their 'intertextuality', i.e. how texts are related to each other (Atkinson & Coffey 1997) and their *relationality* as a fundamental of ANT (See Table 3.1 in Chapter 3). Moreover, following texts became a process of understanding how they link to and build on each

other and how they associate with other actors in the network. Intertextuality was accounted for by the IMO's coding system for documents, which links them all together in an informative and traceable web (see Section 5.3.5). Awareness of this enabled me to explore translation attempts across meetings by following the essence of a proposal as it appeared in submissions to each meeting with new layers of argument and support (see Chapter 6 for detailed discussion of texts). Over the course of the fieldwork and analysis, relationality of texts in the process was explored through observation of their role, analysis of the texts themselves and discussions about texts in interviews.

Selection of documentary data was similar to the choice to observe at meetings in that it was purposeful and in line with both answering the research questions and the application of ANT. Initially I downloaded hundreds of documents from IMODOCs and began sorting through them. I then narrowed my reading by relevancy. There were two main elements that made a document relevant, firstly its connection to the overall process of developing regulation and the IMO as an organisation and secondly, its specific connection to the evolving network description and narrative themes.

Once the most relevant documents were identified (130 documents) I read though them and distilled them to 57 key documents with the help of my observation notes and my increasing clarity on the themes and theoretical terminologies I was using for in-depth analysis. This process was carried out throughout the data collection period.

The IMO has six official languages; Arabic, Chinese, English, French, Russian and Spanish. Its working languages are English, French and Spanish (IMO 2017d). Almost all of the documents analysed were written in English, however during the meetings some of the Delegations requested their statements to be annexed to the report. Three statements were annexed in Spanish and although the statement had been spoken in English, a member of the University fluent in Spanish kindly translated these written statements. Having explained the choice and approach to gathering documentary data the following section reflects on the use of this data.

4.6.1 Reflections on Documentary Data

There were limitations to the use of documents in this study. The establishing Convention of the IMO and rules of procedure for the MEPC were key documents for understanding the Organization, however these documents did not provide deep insight into the actual processes and practices involved of developing a regulation. In their discussion of using texts in research Atkinson and Coffey state:

'We should not use documentary sources as surrogates for other kinds of data. We cannot…learn through records alone how an organization actually operates day-by-day' (Atkinson & Coffey 1997, p47).

This quote captures my experience of the using documentary data. While the documents were key to the explanation of the network and its process, analysis of documents essentially re-emphasized the need for other forms of data to be collected, i.e. the observation and the interview data. The limitations of documents, rather than being a disadvantage, confirmed the choice to collect multiple data types. The following section introduces my approach to conducting interviews.

4.7 Interviews

Interviews are one of the most used data collection methods for qualitative researchers (Bryman 2012; Burgess 1984). They have become ubiquitous in the social sciences and are often used in conjunction with ethnographic approaches (Arnould & Wallendorf 1994). Indeed, we are now living in an 'interview society' (Silverman 2007; Roulston 2010; Alvesson & Ashcraft 2012). As a result, questions have been raised about the use of interviews by social researchers in methodological literature (Roulston 2010). Silverman (2007, p46) goes as far as to consider researchers 'blinkered' if they choose to use interviews as a method without reflecting on their rationale. It is therefore important to justify the choice to use interviews.

Although carrying out interviews was part of my initial research plan, I had envisaged conversational interviews in the field. However, the need for in-depth interviews emerged from process of observation. There were three reasons why I needed to carry out interviews. Firstly, the actors and processes under observation were extremely

complex and as such I needed clarifications on my own observations. Secondly, as explained in Section 4.7.3, interviews with delegates provided opportunities to reconstruct the process of creating submissions through their accounts in order to understand the key part of the regulatory process which occurs outwith the MEPC meetings. Thirdly, interviews provided greater insight into the roles of the Delegates, Secretariat and the Chairmen. Thus, I adapted my research plan, focusing on observing and sourcing participants at meetings and carrying out in-depth interviews between meetings.

4.7.1 Selecting Participants

Just as ANT values the exploration of micro heterogeneous relations to explain macro level social phenomenon (Callon & Latour 1981), interviews were an opportunity to reconstruct the collective regulatory network through conversations with individual actors. In this research, selection of participants was theory driven, and evolved during fieldwork (Miles et al. 2014).

It is perhaps helpful to note that in utilizing ANT as a theory and a methodology (Latour 1999a; Jóhannesson 2005; Lukka & Vinnari 2017), the researcher must maintain a comprehensive ontological and epistemological position. As such, interviewees were selected in order to produce a rich description of the network (Latour 2005; Venturini 2009). In other words, *'...choice of research participants should be determined by the focus of our research, thereby enabling us to meet our research aim and answer our research question'* (Saunders 2012, p36). Furthermore, the methods of selection were kept in line with the fundamental prescription of ANT to *follow the actors* and *trace associations* (Latour 2005).

A combination of approaches was used to satisfy the aforementioned principles. At the meetings with hundreds of delegates, I took an opportunistic approach (Buchanan et al. 1988) and made contacts with delegates during break times, introduced my research and asked if they would mind taking part in an interview. I continued to make contacts and request interviews throughout the three meetings (see Figure 4.1) until I felt I had

enough data to supplement my other data types and produce *thick description* (Geertz 1973; Arnould & Wallendorf 1994; Tracy 2010; Corson et al. 2014).

In addition to this, I asked interviewees if they could put me in touch with their contacts. Known as snowball sampling[36] by wider methodological texts, in ANT this can be seen as tracing the network. In addition to snowballing and opportunism, some participants were simply approached due to their perceived relevance for the study. In snowballing the network, I found trust was an important factor in this tight-knit community. In my experience, if an interviewee introduced me at a meeting or put me in touch with other contacts, I was more likely to get an interview than when I approached people myself. Snowballing, or network tracing, did not turn out to be as simple as it is often presented. Some participants would offer up three or four connections while many offered one or none. A further issue with snowballing a tightly knit community was maintaining confidentiality when asking participants to put me in touch with their contexts. This issue is detailed Section 4.9: Ethical Considerations.

In summary, through direct approach, opportunism and snowballing I assembled a collective of participants to interview that supplemented other data types and enriched the construction of this account of the MEPC network, its actors and processes. The following section explains how the interviews were conducted.

4.7.2 Conducting Interviews

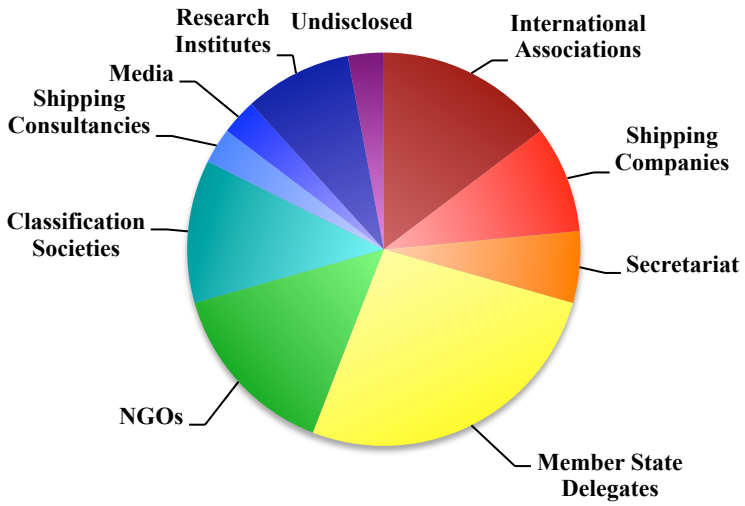
During fieldwork 36 interviews were completed (See Table 4.3 below). Figure 4.2 shows that the methods of selecting participants lead to a heterogeneous representation of the human actors in the data. In addition to a variety of positions and experience being captured, the interviewees' roles were regionally diverse. While specific nations cannot be stated due to confidentiality reasons, the participants in this study work in North America, Europe, Asia and Oceania.

[36] Snowball sampling involves asking one or a small group of participants to nominate and perhaps connect the researcher with other potential participants (May 2001; Bryman 2012).

Table 4.3: Interview Data Collected Between November 2015 and December 2016

Total number of participants	Total number of interviews	Total hours recorded	Average interview length
36	39	37:51:04	01:03:05

Figure 4.2: Distribution of Interviewee Roles



Interviews do not commence 'when the first question is asked' (May 2001, p132). Instead, preparation is part of the practice of interviews (ibid.) and involved compilation of a small amount of background information on participants and their organisations. This activity had two advantages. Firstly, it helped to me to create some questions specific to the individual, which in turn assisted in building rapport. Secondly, conducting background research sometimes resulted in finding extra aspects of their role or their organisation that might not have been covered otherwise, but that were relevant to the research.

Interviews were semi-structured. Questions were mostly 'non-directive'[37] to allow for expansion and detail (May 2001 p129). Question types included probing questions, specifying questions, follow-up questions, indirect questions and interpreting questions

[37] Directive questions require only a 'yes' or 'no' answer, while non-directive questions allow a more open response (May 2001).

(Bryman 2012). I prepared a set of core questions grouped under themes and altered the questions asked of each individual based on their organisation (see Appendix 1 for core themes). For example, only participants that confirmed experience with creating MEPC submissions were asked to explain this process. Additionally, data from interviews shaped and refined the questions asked in later interviews. Some participants asked for a list of questions in advance of the interviews and were sent a list drawn from the core themes (see Appendix 1). Each participant was informed that the list was not exhaustive and that they might be asked other questions depending on their responses.

The interview normally started with either a question asking the interviewee to discuss the IMO in their own words or to detail their role in their organisation, and, their experience with the regulatory process. Encouraging the participants to elaborate on their own role or their opinions of the IMO (and by extension the MEPC) gave the interviews some momentum and flow and it also allowed me to pick up extra background details that would sometimes shape the interview. For example, when a Delegate told me that he had been in a Chairman position, I adapted my questions to include those regarding the role of a Chairman.

In addition to adapting question sets to reflect an individual's role and experience, the order of questions was varied in response to the interview content in an attempt to make the most of limited time. Some questions that seemed to reach a saturation point in earlier interviews were dropped from later ones in line with the semi-structured interview format (Fulcher & Scott 2011). Flexibility was particularly important in interviewing high-level professionals with busy schedules and limited time to give to the researcher. Excluding questions that had reached a point of saturation made time for questions that arose from new insights from the observation fieldwork.

This study's participants can be understood to be *elite participants* (Richards 1996)[38]. They work in offices all over the world and so the majority of interviews were carried

[38] In using this term, I refer to the work of Richards who defines 'elites' as, *'a group of individuals, who hold, or have held, a privileged position in society and, as such, as far as a political scientist is concerned, are likely to have had more influence on political outcomes than general members of the*

out over the phone. Skype was used when specifically requested by participants. All interviews were recorded[39]. In addition to recording and transcribing I took handwritten notes during the interviews. From the interviews 35 transcripts were generated, as one phone interview was too poor in quality to transcribe from the call. The challenges of carrying out these interviews will be discussed in the following section.

4.7.3 Reflections on Interviews

Interviewing as a method of data collection is acknowledged to have certain drawbacks. One concern is whether the interviewer is able to get a 'true' answer from a respondent. ANT considers knowledge to be a production of heterogeneous associations (Latour & Woolgar 1979). Thus, questioning whether an underlying truth was discovered, or even assuming that there is one, is in conflict with ANT's epistemological position. Interviews, therefore can be seen as an association between researcher and participant that produces knowledge. This knowledge was then used to explain the MEPC collective.

The main difficulties experienced with the use of semi-structured interviews were of a more practical nature. Due to the international context of the participants' work, many interviews were conducted over the phone and the sound quality was not always optimum. Recording these international calls and from the phone's loudspeaker meant that during transcription parts of the audio were unclear. In contrast, the recordings taken from interviews conducted face-to-face[40] were much cleaner and therefore easier to transcribe. Face-to-face interviews are often argued to produce a better rapport between the interviewer and interviewee however recent studies suggest that there may

---

public' (Richards 1996, p199). If we switch 'society' for the 'shipping industry' then most of the participants interviewed fit with the definition of an elite when their position in a political process is considered.

[39] According to Silverman, *'It goes without saying that your interviews should always be recorded'* (Silverman 2010, p199). In consideration of the choice to record, I drew insight from the discussion of the advantages and disadvantages of recording in May (2001, p137-138) and the discussion of the factors affecting the choice to record in Hayes & Mattimoe (2004).

[40] Only seven interviews could be conducted face-to-face.

be little difference between mediums (Sturges & Hanrahan 2004; Irvine et al. 2012; Vogl 2013). In the case of my research and in consideration practicalities, phone interviews were the only option for the majority of the interviews. Being elite professionals (Richards 1996) many of the participants were experienced with having in-depth discussions over the phone. Other than the practical differences, no difference in interview length, flow, rapport or depth of detail was experienced when conducting interviews by phone in comparison to the face-to-face interviews, which is important considering that the aim was to construct rich description.

Despite the possible disadvantages and practical difficulties, interviews were a vital method for this research as they allowed me to reconstruct parts of the process that were unobservable and supplement my observations with essential detail. The following section moves on to explain the end of the data collection period.

4.8 Finishing Data Collection

The data collection period finished with a final interview on the 16th of December 2016. The MEPC meetings proved the best source of interview participants and so the data collection continued after the last meeting had been observed in order to interview the contacts made at MEPC70. Although practical time constraints were naturally a factor in the decision to end data collection (Saunders 2012), the main reason for finalizing the data collection was that I felt I had reached a point of '*theoretical saturation'* where *'new data no longer suggests new insights into an emergent theory or no longer suggests new dimensions of theoretical categories'* (Bryman 2012, p421). In ANT terms, I felt that I had followed the actors and action enough to construct an account of the network responsible for developing control over shipping emissions. Indeed, once the analysis and write up process were started this decision was confirmed and it was clear that collecting four forms of data throughout 15 months have produced a wealth of data to draw upon as illustrated by Table 4.4 below. Following on from the description of methods and the amount of data collection, the next section focuses on ethical considerations for this research.

Table 4.4: Overview of Data Collected From September 2015 to December 2016

Data Method/Type	Data Amount
Observation	11 days
Observation Notes	309 A5 pages & 11 A4 pages
Plenary Transcripts	3
Researcher's Photographs	171
Official IMO Photographs	40
Documents	130
Key Documents	57
Interviews	39
Interview Transcripts	38*

* One interview recording was too poor quality to transcribe and so notes were made instead.

4.9 Ethical Considerations

Prior to commencing fieldwork, ethical approval was sought and was granted (see Appendix 2 for Ethics Approval Letter). This section reflects on some of the ethical considerations of the data collection methods and the choices that were made to offset any concerns. The reflections are broken down by method with a final section on data confidentiality, as this was a particularly controversial issue in the context of the IMO.

4.9.1 Observation

During my observation of the meetings I experienced an ethical issue. Although I had permission to attend and observe meetings, not every Delegate was aware of my purpose. Although I was not a *'covert'* observer in a traditional sense (Fulcher & Scott 2011 p80; Silverman 2010 p203), I was often assumed to be a Delegate of the organisation that had registered me, rather than being known as an independent researcher. Over the course of the two MEPCs I was invited to sit with two Member State Delegations and in a WG I was seated next to an Industry Association. As a result I was also mistaken for members of these Delegations. In conducting an ethnography, a researcher must be mindful of their ethical choices and in order to avoid the deception associated with covert research I explained my research project to any Delegates I met

(Neyland 2007). While methods textbooks often draw clear lines between covert and overt research in practice, my position as a researcher was *overt-unknown.*

I also faced an ethical choice about what should be included or excluded from the data, though this is a choice faced by most ethnographers (Neyland 2007). In moving around the room at break times I overheard snippets of Delegates' conversations and although this type of conversation can often form part of the research data (Fulcher & Scott 2011), due to the sensitivity of the issues, the elite level of the participants (Richards 1996), and my role as a researcher being unknown to the majority of Delegates I decided to treat these conversations as private and confidential and did not record them as part of the data.

4.9.2 Photographs

The biggest ethical considerations for a researcher taking and using photographs is permission and anonymity of those depicted in images (Pauwels 2008). Under my registration as a Delegate I had permission to take photographs, which I confirmed through email. However, as I did not have every individual Delegate's permission I avoided taking photographs featuring people by taking them early in the morning or later at night once the majority of Delegates had left. In making this choice I was not faced with issues of anonymity or 'harm' (ibid). The photos inserted in the thesis are the originals with no filters or editing other than resizing. In order to show the Plenary discussions with the Delegates I have used the IMO official photographs and credited them accordingly.

4.9.3 Interviews

All interviewees were asked to sign the University's consent form, which detailed the project and requested to use their responses as part of the research. In each interview, I also asked consent to record, transcribe and quote from the interview. All interviewees agreed to be recorded and the majority agreed to being quoted. Non-quotable interviews were still transcribed in order to capture the detail of the interview. Permission was given to assign a random number to their transcript and identify them by this number

and an organisational-based title, for example, a Member State Delegate or a member of a shipping company. One or two interviewees requested a more ambiguous organisational title as they felt they might still be identifiable. The majority of the interviewees asked for their nationality and/or region of their organisation to be confidential as these were deemed identifiable information.

While I had prepared to deal with issues of consent and anonymity with regards to the interview data, an unexpected issue arose from my method for selecting participants. As explained in Section 4.7.1, snowballing was used to attempt to travel through participants' personal networks. However, this raised an interesting and unforeseen issue. When attempting to snowball I asked participants if they could think of anyone who would be good to interview and that would agree to be part of the research. Quite a few Delegates recommended people who had already been interviewed and offered to put me in touch with them. In order to protect the anonymity of the participants but avoid rejecting a generous offer I told them that I had been in contact with that person but due to anonymity reasons I couldn't say whether or not they were part of the research. This was an effective approach to a problem that I had not anticipated. The issue itself also emphasized the success of the selection approach in that highly recommended participants were clearly key actors in the network.

4.9.4 Documents

The only ethical consideration in connection with the documentary data is the confidentiality of documents. Although submissions are only available to Delegates in advance of the meeting, they are uploaded to the publically accessible area of the IMODOCs after the meeting. The other documents quoted (i.e. meeting reports, Basic Document etc.) are also publically available. The only documents that remain confidential are the draft texts created, printed and altered during meetings. As such, none of these documents have been quoted in the thesis.

4.9.5 Meeting Confidentiality

This section explains the ethical consideration of meeting confidentiality. In undertaking ethnography, it is not only important to reflect on how data is collected but also how it is presented, i.e. what to include or exclude (Neyland 2007). This was a particular issue for me as the aim of this study was to follow actors and produce rich and detailed descriptions of the meetings, which pointed towards using direct quotes from the meetings observed. However, the IMO meetings are conducted in private (IMO 2010) and this raised the issue of whether or not I should quote Delegations from the discussions. Although I had permission to observe through my registration with a Delegation this did not automatically allow me to quote from the discussions. I made the choice not to quote Delegates directly based on three considerations: the rules and practices of the IMO, a moment of controversy over discussion confidentiality at MEPC69 and the approach of other researchers in this area. I will now elaborate on these considerations.

The terms and conditions laid out on the IMO website for members of the media attending meetings preclude named quotes without prior consent stating *'named speakers will not be quoted without their prior consent'* (IMO 2018a). This webpage is aimed at members of the media and does not say anything about anonymous quotes or quoting for the purposes of research. However, the Organization's own process of creating meeting reports involves a level of anonymising. No Delegations are quoted in meeting reports, unless they specifically ask their statement to be annexed in the report and instead summary comments are created for the collective.[41] These practices along with the confidentiality of the meetings sensitized me to the issue of directly quoting Delegates from the discussions.

[41] Instead of quoting or even referring to individual Delegations the MEPC69 report states, '*In the ensuing discussion, the following general comments were, inter alia, made:*' and then goes on to list the comments without naming the Delegations or quoting them directly. In WG reports generalized statements such as, '*There was consensus in the group…*', '*There was also general acknowledgement within the group…*', '*Several Delegations raised the issue of...*' These statements are used in order to avoid directly connecting Delegations to lines of argument.

My sensitivity to quoting from meetings was increased at MEPC69 when one of the NGOs with Consulting Status at the IMO, disappointed with the result of the discussions on the Reduction of GHG Emissions composed and published a press release for their website before the end of the MEPC meeting. The piece was critical in tone and named specific Delegations, as the excerpt below illustrates:

> 'Meeting in London this week, the IMO was hopelessly split in a divisive debate with most of the so-called BRICS countries opposing the call from Pacific island nations, developed countries and much of the industry to develop a post-Paris work plan on what emissions cuts would be needed.
> The IMO's new secretary-general was forced to intervene, appealing to governments not to kill the post-Paris discussion, while France warned that a failure to advance the plan would mean the UN shipping body would be "held up to ridicule on the very day the Paris agreement was being signed in New York." In an extraordinary move that repudiated the call for action from its island neighbours, the Cook Islands aligned with China against developing a plan. The meeting broke up with no agreement and the entire issue was put off until the next meeting of the IMO's environment committee in October.'

Excerpt from: 'IMO scuttles shipping's response to Paris climate deal', (Transport & Environment 2016).

The excerpt both names Member Delegations in connection with their arguments and positions in the discussions and directly quotes. The very next day this was met with a harsh response from some Member Delegates. In a statement to the Committee made by China, which they requested be appended to the meeting report, they said:

> It is very regrettable that we have to point out that CSC misplaced and failed the trust we as Member States accord to it and abused the rights to attend IMO meetings.
> We are here to call upon fellow Member States and organizations with consultative status with this Organization, to cherish the spirit of cooperation that our Organization has been thriving upon to safeguard this Organization's credibility. We also kindly request the Secretariat to take effective measures to clear up the glaring influence caused by that slandering article.

(Excerpt from MEPC69/21/Add.1 Annex 17, p8)

The Cook Islands made a second statement supporting China condemning the actions of the CSC, which was also appended to the report. These two statements have been presented in full in Appendix 3. As a result of the controversy at MEPC69 and in accordance with IMO protocols, I reflected on how best to write up the discussions.

The final factor in the choice not to directly quote from meeting discussions was the approach taken by other researchers with the same issue. During post data collection conversations with the researchers I met at the IMO (see Section 4.4) I learnt that they had decided not to publish data connecting individual Member States with their positions in the negotiations. They made the choice not to publish this data due to the considerations of meeting confidentiality, sensitivity to the possibility of future access to meetings and Delegates and in response to the same moment of controversy I observed at MEPC69. This further supported and solidified my own decision.

In summary, I decided not to directly quote or name delegations. However, in order not to lose the story completely I have chosen to summarise and paraphrase lines of arguments that were used in the discussion. Additionally, and in order to present key data, I made the decision to include quotes from the Chairman. He is a figure of neutrality and his role was an important feature for the narrative. Furthermore, the statements from China and the Cook Islands concern the naming and quoting of Member States only. Lastly, excerpts of submissions are presented in the data chapters and in general, the positions laid out in submissions are the positions that are upheld during the plenary discussions. In this way, I have dealt with a sensitive ethical choice

without losing the richness of the data. As the ethical considerations and choices for this research have now been presented, the chapter moves on to explain the data analysis.

4.10. Data Analysis

The aim of the data analysis was to produce *thick description* (Geertz 1973; Arnould & Wallendorf 1994; Tracy 2010; Corson et al. 2014) which would provide answers to the research questions and contribute to existing literatures. Data analysis was an iterative process as it was undertaken concurrently to the data collection and extending beyond the end of data collection. Upon a review of ANT studies, a theorized narrative was evident as an output of data analysis. Close reading, open and thematic coding have been applied in ANT studies to analyse data for example Rydin (2012), Gherardi & Perrotta (2011) and Egan (2014) respectively. Accordingly, I decided to undertake a close reading of the data and to supplement this with thematic coding and annotating. Indeed, I found myself drawn to thematic coding as a way to organise the data, or in the words of Law I used coding as a way to cut through the 'ethnographic dazzle' (Law 2004, p108). The same method of data analysis was used across the documents, observation notes, Plenary and interview transcripts. As discussed in Section 4.5, photographs were used to supplement observation notes and then inserted into the narrative.

A code is a label attached to a chunk of data that assigns meaning to the data (Miles et al. 2014). They can be simply descriptive, evocative or complex (ibid.). In addition to the thematic codes I added annotations and notes in the margins. The codes and annotations were inspired by descriptive and process coding (Miles et al. 2014). They included both the themes that emerged from the field itself as well as the application of ANT terminologies as theoretical framings for the data, for example the vocabularies of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013). Coding, therefore, was a combination of *inductive,* where the codes were derived from the context, and *deductive* where the codes were drawn from ANT terminology and concepts (Miles et al. 2014). By applying inductive and deductive coding the research was analysed and theorized concurrently. This is the approach I took to deal with one of the paradoxical tensions of ANT mentioned in Chapter 4; to follow and listen to the actors (Latour 2005; Venturini

2012) while at the same time not simply repeating their rhetoric (Callon 1986a) or losing the language of the actors (Miettinen 1999).

Coding has been criticized for causing 'data fragmentation' or the loss of context and narrative flow (Coffey & Atkinson 1996). I avoided over-coding or fragmentation by choosing not to engage in 'sub-coding', also known as second-order coding (Miles et al. 2014). Recognizing that descriptive depth was the aim, I attempted to code and annotate in order to create a thorough explanation to answer the research questions.

In addition to close reading, annotations and coding, writing up was also considered to be part of the analysis process. Writing about the data assisted in sorting and processing it and evaluating the emergent themes. In writing the data up, connections became stronger and new insights were made. Furthermore, writing is acknowledged as a way of thinking (Becker 1986), a method for the development and communication of ideas (Zerubavel 1999; Lofland et al. 2006) and ultimately as ethnography itself (Van Maanen 2011). Therefore, writing up was an essential part of shaping the empirical and theoretical insights (ibid) and thus a form of analysis.

4.11 Presentation of Data

Due to the variety of data sources, the presentation of data is explained in this section. Observation notes are presented in the form of vignettes and photographs are presented in Appendix 4. Interviewees have been kept anonymous with only a number and organizational descriptor. I chose to combine anonymity of participants with a descriptor of their role, rather than use pseudonyms, because it gives more context to the data. This approach is consistent with other ANT studies (McGuirk 2000; Mouritsen et al. 2009; Eden 2009; Jollands et al. 2015) and a key study on the future role of the IMO in shipping (Lister et al. 2015).

Quotations have been 'cleaned' where possible by removing verbal tics and word repetition (Copland et al. 2015). Quotes from interviews are consistently presented in italics while excerpts from documents have been copied (shortened if necessary) and presented in a box. In this way spoken and written quotes can be distinguished.

4.12 Heterogeneous Research

Latour & Woolgar (1979) showed that knowledge is the production of a heterogeneous network of actors. As the aim of this thesis is to make a contribution to knowledge, it is important to acknowledge the heterogeneous assemblage that made the data collection and analysis possible.

Over the course of the fieldwork, observation notes were written in notebooks, which were then scanned using a phone and backed up to a computer. The pdfs generated were then highlighted, coded and annotated using Adobe. Documents and transcripts were all analysed in the same way. Photographs were taken using a phone and backed up to a computer. Interviews were recorded using two devices in order to have a backup in case one recording failed. A Dictaphone was the primary method of recording and QuickTime Player on a laptop was the secondary method. International calls were made using a specific application to reduce the cost and a few of the interviews were conducted using Skype. Thus, this thesis is the constructed output of a heterogeneous assemblage of actors, i.e. devices, people and myself as a researcher. The following section reflects on the methodology as a whole and concludes the chapter.

4.13 Reflections on the Methodology

Qualitative research is not a simple, neat or linear process but one that is complex, evolving and often shaped by those being researched (Burgess 1984). The purpose of ethnography is not to, '*generate predictive theory or generalize from specific case studies. Rather the goal is to be sufficiently grounded in context so as to be able to draw informed distinctions. Ethnographic case studies offer windows into constitutive processes*' (Corson et al. 2014, p24). Additionally the aim of ethnography is to produce knowledge that both reveals the shortcomings of existing works and then modifies these accordingly (Burawoy 1998; Corson et al. 2014). The methodology detailed in this chapter allowed me to fulfil the aim of ethnographic research and to create empirical and theoretical contributions. Broadly speaking, the methodology in connection with ethnographic writings was effective. I will now narrow my focus and reflect on the methodology in connection with ANT sensitizations.

Reflecting on the appropriateness of the methodology of ANT study is relatively difficult, partly because ANT is itself considered a methodology (Law 2004; Jóhannesson 2005; Law 2007a; Lukka & Vinnari 2017) or a collective of approaches (Cowan & Carr 2008; Fenwick & Edwards 2010) and partly because ANT writers tend to reject methodological rhetoric, for example, John Law views '*Methodological cleanliness*' as an issue, rather than an advantage. He argues that research, *'needs to be messy and heterogeneous, because that is the way it, research, actually is. And also…it needs to be messy because that is the way the largest part of the world is.'* (Law 2007, p3)

On a broader level questions have been raised over whether it is even possible to generate a universal criteria against which to measure qualitative research (Symon & Cassell 2012). Many studies engage on some level with terms such as validity and reliability e.g. Cullinane & Cullinane (2013) and Lu et al. (2009) respectively. These terms however are the rhetoric of a different set of ontological and epistemological beliefs. To use them for an ANT study is to use a scale of 'appleyness' on a bunch of oranges. So how can we assess the effectiveness of an ANT methodology? The answer is within the theory itself. ANT offers a set of fundamental principles to apply in researching controversies and social phenomena (see Table 3.1). By assessing my engagement with these principles, I can offer a reflection on the quality of this ANT study.

In the beginning of this chapter, I argued that ANT is open and non-prescriptive when it comes to methods and instead offers advice such as *follow the actors, trace associations,* and, '*…just describe the state of affairs at hand'* (Latour 2005, p144). In terms of positioning, the researcher must be mindfully symmetrical (Callon 1986a; Latour 2005) and appreciate heterogeneous relationality (Law 1992; Latour 2005). In his explanation of how to deconstruct controversy Venturini (2012) expanded on these points listing his own seven recommendations:

'1. you shall listen to actors' voices more than to your own presumptions;
2. you shall observe from as many viewpoints as possible;
3. you shall not restrain your observation to any single theory or methodology;
4. you shall adjust your descriptions and observations recursively;
5. you shall simplify complexity respectfully;
6. you shall attribute to each actor a visibility proportional to its weight;
7. you shall provide descriptions that are adapted…and flexible.'
(Venturini 2012, p800)

Taking each recommendation in turn, I will now explain how I addressed these points in my methodology. By collecting multiple forms of data over a longitudinal time period I satisfied points 1 and 2. Additionally, listening to the actors was dealt with by naturalizing the principle of symmetry during thematic coding, being mindful to attend to agency, regardless of the source. This approach to analysis also dealt with point 6; attributing visibility in proportion to weight.

Since ANT is known to be a collection of approaches rather than a unitary theory (Miettinen 1999) point 3 is addressed by the application of ANT itself. In Section 4.10 I explained that writing up was considered part of the analysis process and in this way I adjusted my descriptions and observations recursively. Point 5 is complex as Latour sees ANT as a reductionist theory that is also the first step to an irreductionist relational ontology (Latour 1996; Harman 2007). Furthermore Law argues that 'clean' accounts are not necessarily in alignment with our messy social worlds (Law 2004; Law 2007b). I therefore strived for detail and clarity when writing my description of the network in Chapters 5,6 and 7 rather than simplification (Venturini 2012) or hygiene (Law 2007b). Finally, point 7 is addressed by the contribution of this thesis to the application of existing ANT descriptors (Chapter 6) and of a new ANT descriptor (Chapter 7).

Having covered the principles of applying ANT, it is also useful to reflect on what is considered a contribution using this theory, namely:

'*A contribution to ANT gently shifts the existing theoretical repertoire…as the theoretical repertoire shifts, it becomes possible to describe further, different cases, and to articulate so far untold events (relations, phenomena, situations).*' (Mol 2010, p261)

The methods chosen were aligned with the theory and the data produced allowed the research questions to be answered over the course of three data chapters where the actors and associations that 'produce' the MEPC as a network are examined (Chapter 5), the processes that bind these actors together are explored (Chapter 6) and new actor-types emerge and are accounted for (Chapter 7). Through the articulation of the network in these three chapters the thesis builds towards a contribution that satisfies the criteria set out by Mol (2010). This methodology can therefore be regarded as an appropriate and effective application of the ANT although Section 8.6 in Chapter 8 will provide some reflections on the limitations of the study overall. The following chapter will begin the account of the MEPC network, as the first of three chapters presenting a rich ethnographical account of developing regulation for the shipping industry.

5. Disassembling the Actors and Associations of the MEPC: Spaces, People and Things

The aim of this chapter is to address the research question, '*What is the MEPC?'* In doing so the chapter disassembles the MEPC into categories and from within these it explains the roles of individual actors. By drawing on observation notes, interview quotes, documentary data and photographs in combination with ANT, this chapter accomplishes two things. Firstly, a *thick description* (Geertz 1973; Arnould & Wallendorf 1994; Tracy 2010; Corson et al. 2014) of the actors involved in the MEPC is offered which allows the macro MEPC assemblage to be understood from a micro level (Callon & Latour 1981) and as such contributes ethnographic detail which is missing from current literature on the IMO (as explained in Chapter 2). Secondly, the description assists in sensitizing the reader to the context. Understanding the actors is the first step in explaining this network and this preliminary empirical sketch provides the foundation for subsequent chapters.

The structure of the account is purposefully congruent to the experience of the field itself. My first interaction in the field was with the IMO Headquarters, so this is explored first. People were the next actor-type I encountered and these are foregrounded for description following the section on spaces. The last part of the chapter explains the objects and technologies in the network.

5.1 IMO Spaces: Principles and Practices, Embodied and Enacted

This section explores the spaces of the IMO (and by extension, the spaces of the MEPC) as constitutive of the Organization and agentive in the process of making regulation. As with the chapter over all, the spaces are explored inline with how they were experienced during observation.

5.1.1 IMO Building

Contrary to the ever-mobile industry it governs, the IMO Headquarters does not move. Situated in Central London beside the River Thames, the building's architecture is

unassuming, save for a ship's bow protruding from the façade, implying its connection to the sea (See Appendix 4, Photos 1 and 2). The entire world's fleet is governed from within this building. It is the epicentre for control-making over the international shipping industry. Meetings hosted in this building draw hundreds of Delegates from all over the world to discuss the problems facing the shipping industry and create ship-shaped regulations[42].

5.1.2 The Foyer

The vignette below presents my experience of entering the Headquarters for the first time[43].

I enter and speak with the receptionist, explaining that I am registered to attend the meeting with a Consulting Organisation. The receptionist tells me they will make me an access badge in the afternoon and offers to open the gate. I decline, asking if it is okay to take some photos of the model ships that are dotted around the room. It is. The ships are in glass cases and the room is very quiet. It feels like a museum – fitting for this historic industry.

I have settled down on a red leather chair – part of a group at the side of the room. It is 8:10 in the morning. Black official cars slide solemnly down into underground parking as Delegates trickle in the main entrance. Two men meet. They shake hands and kiss cheeks. I hear multiple languages spoken – there is an international atmosphere. No one looks at me.

I am intrigued by the position of the IMO on the waterfront. I am imagining the regulations created here flowing out of the building, down the river and out to sea.

It is now 8:35am – I decide to go in.

[42] I use this wording to convey that the regulations must be tailored to the complex activity of the industry and so are *shaped by and for* Shipping.

[43] This vignette was created from the field notes. The writing was edited for brevity.

Inside the building, the foyer is very open. The floor is a shiny dark marble and the walls a lighter marble. A high-mounted screen informs Delegates what meetings are taking place and where. In the middle of the room a long desk faces the front windows. At both ends of this desk, turnstiles sanction entry to the heart of the building. A photographic identity card is required to proceed. A second reception-style desk sits in the near left corner of the room.

A stairway slants across the room behind the middle reception desk as an escalator ascends behind it. A dramatic statue stretches out from under the escalator (depicted in Appendix 4, Photo 3). It appears to be a ship's figurehead; it is a strong, Greco-Roman looking, bearded man. Across from this is another statue; the likeness of Queen Amina riding a rearing horse with her sword raised, which was donated to the IMO by the government of Nigeria (Appendix 4, Photo 4). The statues portray strength, history and the connections the IMO has to many different nations.

This impression is further extended by more objets d'art. The edge of the room is lined with glass cases containing model ships; more gifts from governments showing their gratitude to the IMO. The different model ships represent various industry sectors and 'sail' throughout the halls of the IMO. Photos 5 to 8 in Appendix 4 depict examples of gifted models. The model ships scale down an entire international industry and visually reproduce it, taking the *invisible industry* and making it visible (Cheng & Choy 2007; George 2013). Shipping is displaced from 'out-there', miniaturised, and brought inside for regulating. Echoing Star and Griesmar's study of the museum, the foyer and open spaces of the IMO HQ capture and represent the international shipping industry in 'microcosm' (1989, p391).

While most of the objects are ships, some are cultural or historic objects (see Appendix 4, Photos 9 to 12). The majority of the items are gifts from Member Governments. Plaques on the display cases express the gratitude of the donor to the Organization. The gifts make the spirit of international relations and cooperation physical in the IMO. In doing so they also encourage such practices. These artefacts both reflect and stimulate the international relations entangled in the work of regulating the shipping industry. The

objects are also a way to make one's presence and membership clear and evident. For example, during the fieldwork, a beautiful mosaic fountain was donated by the government of Morocco (see Appendix 4, Photo 12) in advance of Morocco hosting the 20th Conference of Parties, a UN conference for work on the environment. By donating gifts countries can create physical embodiments of their Membership, contribution and gratitude to the Organization.

5.1.3 Plenary Room

The Plenary Room is on the ground floor and is the main discussion room. Agenda items are discussed and Committee decisions are made in this room. Working Groups (WGs) split off from Plenary to go over specific details of agenda items while Plenary continues throughout the five days of the meeting. Plenary meetings have specific start, end and break times, which are mostly adhered to, to give the Translators[44] breaks. My first impressions of the room are detailed in the vignette below:

> *The room is vast. It is a long walk to the back, up a gentle slope. I pass long rafts of wooden desks, floating upon a carpet of blue. Delegates dot the room, individually working on laptops or standing in small clusters. Although people are talking, the sound in the room is suppressed. There is a quiet contemplative atmosphere, like a museum or an art gallery. I feel compelled to tread lightly as I move further in. A ship's bell sits at the front beside the Chairman's desk. There is nothing green here, no sense of land.*

Photos 13-15 in Appendix 4 show the Plenary room, though they do not fully capture the scale and size of it. There is a soft slope to the room, allowing equal viewing for all Delegates and attendees, reminiscent of a theatre. The desks are shaped in a languid half-moon. Two pathways cut them into three sections. The arrangement of the desks points everyone forward in the same direction. There is no sense of confrontation in the room, only cooperation. The names of the Member States (the Country Delegations) are

[44] Plenary discussions are translated into the six official languages of the IMO: Arabic, Chinese, English, French, Russian and Spanish.

laid out in alphabetical order, enacting equality between Member States. The seating for Member States starts at the front of the room and ends where the seating for other Delegation types begins. On the desks there are white name cards with black writing, standing to attention and ready for use. At every desk is a microphone and headphones. Some chairs have no desks but between them the audio headphones are laid out. At the back and top of the room a long observation booth with large glass windows hovers over the last rows of desks and chairs. This observation booth provides extra seating for Delegations which are too large for their allotted space[45].

The Intergovernmental Organisations (IOs) are seated at the end of the Member States and beyond them the Consulting Organisations (COs) sit. The CO Delegations are not arranged alphabetically, either in the room itself or on the participant list of the meeting. Instead, I am told by a Delegate, they are arranged in chronological order according to when they gained consultative status at the Organization. This arrangement of Member States at the front-to-middle of the room and other organisations in the middle-to-back produces a physical representation of a procedural difference. Although the COs are able to make submissions and take part in discussions just like the Member States, only the Member States have the right to vote, although formal votes are rare. By putting these organisations at the back of the room, in a different order to that of the Members, the hierarchy between full Member and Consultative states is physically reflected and produced.

The room is so vast that cameras and screens are mounted high to record and display the Delegates and Chairmen to those at back of the room. Unlike the halls of the IMO, which are populated by shipping paraphernalia gifted to the Organization, Plenary has little ornamentation. It fosters an environment for discussion with little distraction. The only ornamentation in the room is a large metal IMO symbol on the wall behind the Chairman and one below him on the front of his desk. An IMO flag stands to the left of the Chairman's desk. In front of the Chairman on the desk is a ship's bell. This bell is used to signal the start and end of sessions of discussion.

[45] Delegations are different sizes. During the meetings I attended, the smallest Delegation was one person and the largest was around 20-30 people.

The Chairman sits in the middle of the large desk. On his left sit members of the Secretariat and the Director of the Marine Environment Division. On his right the Secretary General sits beside him. Along from him sits the Director of Legal Affairs and External Relations Division, then the Director of the Maritime Safety Division and finally at the end, the Director of Conference Division. There is a second row of chairs behind these. The people who occupy these have no name cards. The Directors and Secretary General signal the connections between this Committee and the other part of the Organization's discursive network. Above the Chairman's desk the Translators' offices sit high above the meeting, following the sweep of the room. During a meeting each office is populated by two Translators.

This room is a physical enactment of the principles of Equality and Consensus held by the Organization. When seated, every person faces the Chairman. The Plenary room reinforces the aim of the Organization, to progress *en masse* together to achieve Consensus. This is further shown in the discussion where Delegates very rarely address each other directly and instead channel their comments respectfully through the Chairman. The layout of the room also serves to reinforce the important role of the Chairman, which will be discussed in Section 5.2.3. The Plenary room is a space where confrontation is physically minimized and cooperation physically encouraged. Thus it both reflects and stimulates the values of the Organization. The following section discusses the rooms for the WGs.

5.1.4 Other Discussion Rooms

During the fieldwork, time was spent observing WG discussions in two rooms; Committee Room 9 and Room 11-13. Both of these rooms differed to Plenary in that they were rectangular and the seating was level and arranged in straight lines, rather than on an incline and with a curve as the Plenary room was. Room 11-13 is shown in Appendix 4, Photo 16. Choice of room for a WG can reflect the importance or contentiousness of an agenda item, for example during MEPC70 the biggest committee rooms were being used for discussion of the Ballast Water regulations and the Fuel Consumption Data Collection System (hereafter DCS). This meant that the WG for Reduction of GHG Emissions was put in Room 11-13, which had a lower seating

capacity. The room filled up quickly as the Delegates came from Plenary to the committee room. At one point, after the discussion had started, the Delegates representing India came in and found that there was no space left next to a microphone. They asked Brazil to speak for them on their behalf and with some rearranging they were able to get into a position with access to a microphone. This highlights the difference between Plenary and other committee rooms. Contrary to Plenary, the WG rooms are not laid out as strictly. If the WG meeting is intercessional and the Secretariat has the time to lay out alphabetical names they will, however during the MEPC, Members and COs would take their name-cards out of a box and sit in almost any order (see photo 16). Equally the COs were not strictly limited to the back of the room, as they were in Plenary. Their inclusion in the main body of the Members was also reflected in the discussion when they contributed more than they did in Plenary. During Plenary, the COs can make interventions but the practice appeared to be to wait until the Member States had had their chance to speak before CO Delegates were called on. Exceptions to this were made for some of the biggest consulting organisations, for example ICS, BIMCO and WSC[46] however equally, at one point the Chairman stated that he would not take comments from consulting bodies until the member states had finished.

The WGs are more informal than Plenary. Participant 28, from a Member State Delegation said that Plenary was often about presenting positions by '*reading prepared statements*' while the WGs are a space where '*interactive exchange*' takes place. Participants also told me that Plenary is more of a political space while the WGs are more technical, which is one of the reasons the COs make more frequent interventions in WGs. As with Plenary, the spatial arrangement of the supplementary committee rooms embodies the discussion style. The WG discussions are more free-form, have a faster pace and more input from COs which is reflected by the unstructured (and at times chaotic) seating and shape of the room. Equally the Delegates all face forward to

[46] ICS is the International Chamber of Shipping, BIMCO is the Baltic and International Maritime Council and WSC is the World Shipping Council. All of these Organisations are Industry Associations and represent the interests of their industry members.

the Chairman, emphasizing the aim of achieving Consensus. The following section discusses the role of the Headquarters as part of the network.

5.1.5 Role of the Headquarters in the MEPC Network

The Headquarters reflects the essence of the work; it makes the invisible industry visible and promotes international cooperation to produce regulation. The discussion spaces embody the principles of Consensus and Equality and encourage their practice, yet each Plenary and WG rooms also differ in their layouts as much as their discussion styles. The Spaces reflect and reproduce the values and work of the Organization.

The Headquarters provides a place where Member States and Consulting Organisations from all over the world can come together and discuss regulation in-person. Though the role of spaces may seem simple, the IMO HQ is an essential facilitative actor in the network that assembles to produce regulation, which is then implemented in the global industry. Furthermore many participants emphasized the importance of face-to-face discussions in the break times for understanding positions. The Delegates see a large part of their own role as trust and network-building, which will be discussed in Section 5.2.5. The physical forum of the IMO HQ allows them to construct their relations during break times and in the margins of the meeting. In keeping with the symmetry encouraged in application of ANT, this section has highlighted the agential qualities of the IMO HQ and its role to embody and encourage the work, principles, practices and values of the Organization. The different 'peoples' of the IMO will now be presented and their roles in the network discussed.

5.2 People in the MEPC

This section will focus on the people of the MEPC, concentrating on the Chairmen, the Secretariat and the Delegates as the key actors in the development of regulation. In exploring and describing these actors, the process of creating international regulation for the shipping industry is explained. In order to understand the role of people in the MEPC, the inner workings of both Plenary and WGs must first be explained.

5.2.1 Plenary Discussion

The committee meeting begins and ends with all the Delegates present in Plenary. It is where the agenda items are discussed. The 'terms of reference' and issues for discussion in WGs are outlined and agreed. The outputs and decisions of the WGs are evaluated in Plenary before final decisions are made. WGs are released from Plenary throughout the week, while Plenary continues simultaneously.

Discussion in Plenary follows an agenda, which is produced in advance of the meeting and uploaded to IMODOCs. Any changes to this agenda are agreed at the start of the MEPC meeting. At the start of each agenda item the papers submitted under that item are all introduced, excepting Information Papers (these will be described in Section 5.3.3). Each submission is introduced by the sponsoring Delegation, or, in the case of co-sponsorship, they are introduced by a Delegate from one of the sponsoring Delegations. Like a verbal abstract, the introduction summarizes the main points of the paper. They are speech-like and often pre-written.

There are hundreds of submissions for an MEPC and introductions allow the Delegates to focus on the content of a particular text and orientate themselves for the coming discussion. When the introduction of submissions concludes, the Chairman declares the floor open for comments. Name cards are raised and discussion commences[47]. When a Delegate speaks it is termed an 'intervention'. Interventions were generally made in English however they can be made in one of the six official languages of the IMO. Equally the discussion can be listened to in any of the six languages by switching through the channels on the headsets provided at every chair. Despite this, a high level of English is necessary, as WGs discussions are not normally translated.

When a Delegation wishes to make an intervention they raise their name card, sometimes called a 'flag'. They keep it raised, until they are spotted and noted by either the Chairman or a member of the Secretariat. At this point they slot the 'flag' back into

[47] Sometimes cards were raised during the introductions themselves but comments were only taken when the Chairman officially opened the floor.

the desk vertically instead of horizontally. The name card then functions as a placeholder in the queue.

During the discussion the Chairman attempts to invite interventions from Member States roughly in the order that the flags were raised. If many flags are raised simultaneously, as was often the case at the opening of an agenda item or in times of controversy, the order of interventions is at the discretion of the Chairman.

The pace of Plenary was generally slow and steady. Interventions were polite, especially on the first day, when many Delegates took a few seconds to greet the crowd, thank the Chairman, make a comment about an international event or include a combination of all of these in their intervention. The first round of Plenary interventions sound like short speeches. In interviews with Delegates they commented that Plenary can seem a little pre-scripted because Delegates are laying out their positions from pre-written interventions. When a Delegate speaks the cameras cut to them and they are shown on the multiple screens at the front of the room. Delegates did not address other Delegates directly in the discussion. They do however name other Delegations with which they wish to align themselves. Even in times of controversy and tension the tone of the meeting remained diplomatic and polite.

If a discussion showed no sign of ending, some Delegations shortened their interventions to the bare minimum. This was framed as an expression of support for the position of a group of Delegations that have shown a common position in the discussion. For example a Delegate might say, *'We wish to align ourselves with the comments made by X, Y and Z'*. On the other hand, some Delegations were interrupted by the Chairman and asked if they could make their intervention shorter[48].

[48] At one point during the MEPC70 this did not work. The Delegate kept to their 'script'. Their intervention ran significantly beyond a normal intervention length so much so that the Chairman, who had asked the Delegate to shorten their intervention, slumped his body forward in a humorous display of fatigue. This drew murmured laughter from the crowd and highlighted the need for efficiency due to the amount of work that must be covered in the short time of the meetings.

The first four days of Plenary are spent working through the agenda items and the last day is spent checking the MEPC report. At the end of the meeting there is a round of applause and Delegates express their gratitude for the work done by the Chairman and the Secretariat.

5.2.2 Working Groups

As previously mentioned discussions in WGs were less formal and less structured than Plenary. Interventions were still polite and directed to the Chairman. However, in WGs Delegations do not have scripted interventions. Instead, they have general positions and make their interventions in line with these. The Delegates must therefore be more adaptive in WGs. Occasionally different interventions in quick succession result in separate discussions happening almost simultaneously, yet also punctuating each other. A few times when the discussion became too fragmented the Chairman halted the interventions and disentangled the lines of discussion.[49]

Plenary and WG discussions have different aims as a Member Delegate explained: *'Plenary is more like the political side of things and working group goes into the technicalities…'* (Participant 35: Member State Delegate). Many interviewees echoed this summation. The WG discussion must work through details and drafting regulations. This involves thinking through the application in practice, which is where the interventions of the COs can be most helpful. The shipping industry is incredibly complex and diverse in its activity and different associations representing different sectors are able to remind the group of the constraints their sector works under. For example, in the discussions of the DCS at the IEEWG, measuring fuel consumption raised the following issues (among others):

- Should the measurement of a journey be port-to-port, berth-to-berth, pilot on/pilot off or something else?
- How can service ships be included, they don't travel great distances but burn fuel in their service activities?

[49] As an observer, it was vital to stay focused at risk of becoming lost entirely.

- What happens if a ship anchors in a temporary berth and is then moved? If the port is long, this is more fuel, but should it be accounted for?
- Should data about cargo carried be included? Should a proxy be used?
- How confidential should the IMO fuel consumption database be?
- When should the recording of fuel consumption start and end?
- How should the data be verified?

Another feature of WGs that did not occur in Plenary was in-meeting huddles where the official discussion was suspended and Delegates rose from their seats to gather together and speak directly to each other without the microphones or Chairman. This will be discussed further in Section 5.3.1.

By describing the Plenary and WG discussions, the above acts as a context from which the individual roles of *people* and *things* can now be foregrounded and discussed.

5.2.3 Chairmen

The Chairmen[50] are essential actors in MEPC meetings and this section will shed light on their role in the network, both in preparation for and during meetings. There are three levels of Chairman in the MEPC:

1. Chairman of the MEPC who chairs Plenary
2. Vice Chairman of the MEPC who can take over if for any reason the MEPC Chairman cannot fulfil his role
3. Chairmen of the WGs

One of the Chairmen interviewed stated that a key part of the work is developing a text. Whether this is a meeting report in Plenary or draft regulation, amendment, report or plan in a WG, the aim of chairing a meeting is to produce a written output representing a consensus made through discussion. In order to fulfil this aim, a Chairman has a multi-faceted role.

[50] The word Chairman is used to denote both male and female chair-people.

The Chairman's work starts before the meeting with extensive preparation. Chairmen must read all of the submissions and are briefed by the Secretariat about the issues in the upcoming meeting. In addition, emails and in-person discussions on the '*margins*' of other IMO meetings and external events were also used to gather Member States' views. As such, Chairmen are able to build up knowledge of the positions of Member States in advance of the meeting, which allows them to better direct the Committee or WG towards agreement. One of the Chairmen interviewed also added that in preparation of the meeting he, along with the help of some Member States and the Secretariat prepared a document to get the WG discussion started:

'…in preparation of that base text we incorporated various views from various countries so that…before starting the discussion of the working group, the base text had to some extent accommodated various views...' (Participant 25: A Chairman)

In creating this document the Chairman was able to increase his knowledge of Member States' thoughts and positions, which in turn prepared him for the interventions that came forward in the discussion.

Once the discussion begins the Chairmen of both Plenary and WGs must patiently preside over the discussion, orchestrating cooperation and agreement. Chairmen must maintain neutrality while hearing from any Delegations that wish to speak. While doing this, they are continually filtering through interventions looking for commonalities that can be synthesized into an overall agreement:

'…Chairman should be kind of neutral on anything and we should hear views from various countries as far as possible and as long as possible, and you see normally, even at the MEPC, there are more than 60 countries who join the meeting, so we should consider there are nearly 60 views on a specific topic and…it's very difficult to coordinate one thing…[in] the case of the IMO it was very difficult and a very tough job.' (Participant 25: A Chairman)

One of the most important skills of a Chairman is the ability to recognise and acknowledge viewpoints from many different sources, both Member States and COs and from these distil, first the essential positions of each speaker, and then the points of alignment overall. In the words of one Delegate:

'…I think a lot of the, kind of the dynamics in the room will ultimately turn to how the meeting is run and the role of the Chair. I think the role of the Chair within the Plenary discussions or working group…is very important and having a Chair that is trusted and that will respond to Delegates concerns…and who is deft at seeing where the convergences are among countries statements and countries positions, uh, I think is quite important.' (Participant 28: Member State Delegate)

The interventions themselves can be exceedingly complex. In discussions, particularly in Plenary, once the main positions have been vocalized Delegates speaking later will often shorten their interventions to a simple statement of support for the Delegations with which they align. For example, *'We would like to align with our distinguished colleagues from X, Y and Z'* or *'We support the statements made by X and Y'.* Although this is an effective way to shorten discussion time by avoiding re-stating arguments made in previous statements, it can make the discussion difficult to follow. The Chairman must be able to take short but effective notes, not only of the different positions on the issue, but of the Delegations that hold this position. During observation, Chairmen seemed to keep a tally of the discussion in terms of support and opposition. It takes great skill to keep track of the discussion. Often Delegates name multiple alignments in their interventions, some with other Delegates that spoke 15-20 minutes earlier. This is also one of the reasons that familiarity with the general positions of Member States and having an idea of how the meeting will play out during preparation is vitally important.

During analysis of Plenary transcripts it became apparent that interventions, especially those early in a discussion in Plenary, often make more than one point on a particular issue. This means that when Delegates align with other Delegations, it can be unclear exactly what they are aligning with as each of the Delegations in their list had some

points of difference in their intervention. Some Delegations would, for example, express full support for the contents of a submission while other Delegations would express support with comments, exceptions and concerns. If these two types of intervention are included in one *alignment list*, it is difficult to discern the exact position of the Delegation in question. Indeed, with the interventions being speech-like in the beginning and Plenary discussions lasting hours and straddling coffee and lunch breaks, keeping track of all points of agreement and conflict is challenging.

According to one Delegate, a skilled Chairman should also be able to create a discursive environment that promotes problem solving stating that it:
'…comes back to one of the skills of the chairperson…if you just go around the room and one person says X and some person says Y and one person says Z, and the person running the meeting just says thank you, thank you, oh what are we going to do? You need somebody to try and create a problem-solving atmosphere' (Participant 15: A CO Delegate from an Industry Association)

In addition to the challenge of understanding and mapping positions and bringing the Committee or WG to an agreement, Chairmen face difficult time constraints with the meeting lasting only 5 days (or less in the case of WGs). Plenary and WG Chairmen have the authority to deny the floor to a Delegate if they feel that their interventions had become inappropriate or irrelevant. In the IEEWG attended in September 2015 a Delegation made repeated interventions stating an apparently unhelpful and seemingly irrelevant point. For the sake of progress the Chairman ultimately refused to give the Delegation the floor and instead asked them to provide a statement that could be annexed to the report. Equally in Plenary discussions on day five of MEPC69, as the Committee were going through the report, some Delegations made interventions that the Chairman felt were opening up the issues themselves rather than commenting on the accuracy of the summary points of the report. He asked Delegations not to re-open discussions that were closed. On balance, however, this was rare and Delegates were given the floor repeatedly, especially in WGs. They would often express their gratitude to the Chairman, saying, *'Thank you for letting us come in on this again'* or similar

wordings. This highlights the authority of the Chairman and also his responsibility to orchestrate the negotiations in relation to time, progress, relevancy etc.

The Chairmen need patience and energy. They must be able to listen to hundreds of interventions, sorting through Plenary-style speeches, or the more informal WG interventions, to the core position of the Delegation while simultaneously using commonalities to move the network towards agreement. When all the Delegates leave the discussion to go out to dinner or return to their hotel rooms to sleep, the Chairmen and the Secretariat can still be busy creating new documents, either new drafts of documents under discussion with the day's amendments and agreements factored in or the reports of the meetings. During a brief conversation at MEPC70, the Chairman of the WG recounted that he had only managed a few hours of sleep and that the Plenary Chairman had only an hour. The Chairman's job can be a low sleep, high focus marathon.

There are differences between Plenary and WG chairmen. In WGs the Chairman will hear from a subset of the Committee in specific and technical detail. In Plenary the Chairman hears from any number of the Member States and additional COs who wish to make interventions across approximately 15-20 different agenda items[51]. In essence the Plenary Chairman deals with volume, variety and overviews and the WG Chairman deals with depth, detail and drafting.

The WG Chairman has the discretionary authority to allow or even suggest in-meeting huddles and splinter groups. These groupings were seen as actors due to their agency in the process and will be discussed in Section 5.3.1. Informal huddles during the WG allow Delegates to assemble together and communicate their positions, opinions and ideas directly. The Chairman does not orchestrate these, he waits until they are concluded and then begins the formal discussion again. Both huddles in the meeting room and sub-groupings during breaks can help to resolves points of controversy in the discussion. In this way the Chairman mobilizes informal groupings to resolve conflicts.

[51] Some of the agenda items don't require an in depth discussion, for example agenda item 1 is the adoption of the agenda.

Thus far, this section has examined the role of the Chairman as an orchestrator of cooperation and progress within strict time limits. In order to fully understand how Chairmen carry out this role, their tactics through the negotiations must be examined. Plenary and WG Chairmen tend to have different approaches to meet their aims. A discussion session on an agenda item may naturally converge to a point of Consensus. However, if it does not the Chairman has three main tactics to produce agreement. One approach is to appeal directly to the Members themselves to compromise. During the contentious agenda item of Reduction of GHG Emissions in MEPC69 and 70 the Chairman was observed employing this approach in an attempt to progress past a discursive deadlock. He couched his appeals to the Delegates in a personable way, asking for *'help'* to reach agreement and humorously showing disappointment at persisting disagreement. There were three general responses to the appeals of the Chairman. One was for the discussion to continue with Delegates stuck in opposition. However, the Delegates, like the Chairman, are driven by a need to achieve progress through Consensus and the more common response to such appeals was for Delegations to propose a new direction or to simply compromise their own position[52], yielding slightly to create agreement.

A second tactic for the Chairman is to suggest a compromise himself. This occurred in MEPC69 when the Chairman created a summary of the discussion and the room was split over the last two points of the summary. Some Delegations wanted both points to remain in the summary making them action points and other Delegations wanted both points removed. As a compromise the Chairman suggested including one point. This halfway manoeuvre produced an acceptable level of Consensus and as such, it was carried out.

[52] This option is only open to Delegates who have authority to do so. During interviews I learned that the amount of autonomy of the Delegates differs between Delegations and between agenda items. Some Delegations, though accountable to their Government, have the autonomy to adapt on the spot and others are constrained by their Government and must have permission before changing their position on an issue.

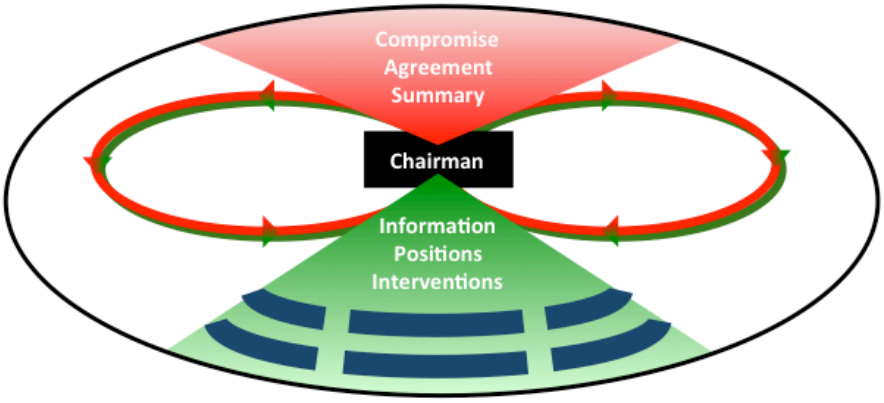
Time has already been discussed as being a limiting factor on the negotiations. The third tactic for a Chairman is to use time to pressure the Delegations to reach and agreement. This can be done by either frequently referring to the time passing balanced against the progress level or the denial of breaks and extension of discussion hours to start earlier and finish later. Coffee breaks were not only withheld in the face of poor progress, Chairmen would sometimes frame them as a bargaining chip; reaching agreement on an issue would allow for a coffee break which becomes a highly desired time as Delegates both need a break from the long complex discussions and also the opportunity to speak directly to other Delegations in margin negotiations.

The extension of discussion hours was a tactic that the WG Chairman employed. WG hours were moved as necessary to accommodate progress. During MEPC70, the WG negotiations were fraught with controversy and conflict over the possible formation of a new type of group discussion, Roadmap dates, level of ambition and the disharmony between regulatory principles (to be discussed in Chapter 7). In order to achieve agreement, the hours of the WG had to be extended. The first day of the WG ended at around 10pm and the second and longest day commenced at 8:30am and finished at around 1am.

One Member Delegate who had been a part of the WG stated in interview,
'...he [the Chairman] consciously put pressure on people by simply time, hoping also that people give in and are more ready to compromise later…This is certainly a technique if not a tactic.' (Participant 29: Member State Delegate)

Throughout this section, the role and techniques of a Chairman have been described. In order to more fully depict his position in the network the following diagram was created.

Figure 5.1: The Role of the Chairman



In Figure 5.1, the flow of the discussions can be seen moving from the Delegates (green) who make interventions to present their positions and information through the Chairman (black) who synthesises these interventions into compromises, summaries and agreements (red) which in turn flow back to the Delegates for further input. The cycle continues until Consensus is reached.

In summary Chairmen are the mediators of the discussion (Latour 2005). From their background knowledge of previous meetings, and their preparation for the current meeting, they generally know the 'sounds' each Delegation will make. Using the discretion available and their own skills, they gradually orchestrate the discussion, bringing the Delegates as far as possible, to a harmonious Consensus. In doing so, they are not passive vessels through which the interventions filter; they are active constructors, mediating Delegates and the Secretariat to build agreement, and by extension, to create regulation.

5.2.4 The Secretariat

The Secretariat works permanently in the IMO Headquarters. They are the neutral assistants to the Member States. This section describes the work of the Secretariat before, during and in-between meetings.

One of the members of the Secretariat explained the work done with submissions in advance of the meetings. They make sure the incoming submissions meet the standards of the Organization through formatting and checking for errors. They then make submissions available online through the IMODOCs platform. In addition to working with documents the Secretariat must work with the Chairmen:

'...we prepare the meeting for the various chair persons of the meeting in terms of their briefing so that they are aware of all the various issues that have been raised by the various documents that have been submitted, so for example at an MEPC meeting we have over 150 documents submitted at the last session so we have to try and organise the meeting over 5 days to try and cover all those documents under various agenda items…' (Participant 24: A member of the Secretariat)

Thus, in addition to assisting the Chairman to prepare the meeting, the Secretariat also organise the meeting itself. They provide agendas, updates, schedules, advice and essentially *'...try and ensure smooth running as best we can at the meetings…'* (Participant 24: A member of the Secretariat)

During the discussions, in both Plenary and WGs, members of the Secretariat assist the Chairman by helping with the order of interventions and providing advice when required. At the meetings observed, the members of the Secretariat were seen to type notes, draft amendments, guidelines, reports and then print and disseminate these drafts. Participant 36, a Member of the Secretariat explained their role as supporting the Chairman by taking 'live' notes of the discussion in order to create the meeting report or the draft text which becomes the regulatory instrument for implementation.

For the majority of the discussions observed the Secretariat were silent. Exceptions included pre-scheduled moments where they provided reports and updates from other Committees, the Council or external events at the start of an agenda item. When advising the Chairman they mostly spoke to him directly without the use of the microphone. The Chairman then relayed their advice or message to the group. Equally the Delegates rarely spoke to the Secretariat during discussion. However, there were a

few times during observation when the Secretariat spoke directly to the Delegates in WG discussions. Examples from MEPC70 include:

- Informing a Delegate that the conventional practice in writing advanced dates is to use seasons when the exact date of the future MEPC is not known.
- Answering questions about the possibility of creating a stand-alone group to address GHG emissions as was proposed by one Delegation during Plenary discussion.
- Discussion of the possibility of the Secretariat organizing a fourth IMO GHG Emissions Study.

These examples highlight three different dimensions of Secretariat input. The first shows the level of consistency and knowledge of practices that the Secretariat brings to the meeting and specifically to the drafting process. The second shows how they serve the Members. When asked what a stand-alone group would look like, the member of the Secretariat could only respond that responsibility lay with the Delegates to decide what they want and then the Secretariat would be able to facilitate it. The last example also highlights their facilitative role but also that they can organise projects at the request of the Delegates.

Essentially the Secretariat spend their meeting time organizing and assisting. One interviewee emphasized their neutral *'facilitating role'* while another noted that the Secretariat *'...provide a degree of continuity to the proceedings…'* (Participant 24: A member of the Secretariat). Due to the responsibilities associated with their role, they work long hours, keeping the process going with their administrative expertise and constant support for the Chairman and the Delegates. As with the Chairman, their role requires patience and endurance during the long hours of complex discussion.

In addition to their facilitative role, one of the interviewees commented on their liaising role between Member States:

'...we are party to information that isn't shared widely by various Member States that enables us to sort of coordinate with other Member States views and try and work out how we can come to a compromise on various issues and that again is part of the role.'

(Participant 24: A member of the Secretariat)

The interviewee then expanded on this by explaining that when Member States are not able to come to an agreement, the Secretariat can attempt to mediate:
'…one way is for the Secretariat to facilitate that process is to discuss the issues on a bilateral basis rather than, and again Member States might not want to share particular things with the wider body…we will try and help…play go between…that's part of our, if you like diplomatic role…' (Participant 24: A member of the Secretariat)

In addition, between IMO meetings the Secretariat also travel to different organisations and events to represent the work of the IMO/MEPC:
'…we have a representational role where we try and explain the work we are doing because often it's difficult for Member States to go out and talk about the work of the IMO…they're free to do that of course, you know when issues have been agreed but when things are work in progress…it's easier for the Secretariat to sort of represent the status of negotiations and obviously put that very much in…you know, neutral lines...' (Participant 24: A member of the Secretariat).

The Secretariat functions as a conduit; both presenting the work of the IMO Committees to external Organisations and then reporting the outcomes of other regulatory fora to the Committee. In this way they *associate* the work of the IMO to the wider governmental networks of the U.N. and other bodies.

In summary the Secretariat provides support, advice, consistency, administrative services, and generally organise the work done at the IMO. They assist the Chairmen with their roles and can also work with Members directly to create Consensus. At the same time they provide a consistency between meetings, between Committees and link the internal work of the Organization to external governance fora. They are *associative actors.* Assigning this term conveys the role of the Secretariat to create connections; connections between meetings, Members, Committees and Sub-Committees and even links to external organisations. Through their associative work they create the

consistence and hence durability of the network. The next section moves on to discuss the Delegates and Delegations.

5.2.5 Delegations and Delegates

The Delegates are key drivers of the work of the MEPC. This section will begin by explaining types and construction of Delegations and then go on to discuss the work of Member State Delegates and CO Delegates in particular. There are different types of Delegation that attend the IMO MEPC including Member State Delegations, Associate Members[53], representatives from the UN and Specialized Agencies[54], intergovernmental representatives[55] and observers from non-governmental organisations, which are also known as Consulting Organisations.

Delegations vary in size, with the biggest Member States having around 20-30 and the smallest just one Delegate. Larger Delegations can have their own internal hierarchy including having a head of Delegation, representatives, alternatives, advisers and observers[56]. The size of Delegations caused some contention in MEPC69 and 70. A small Delegation took issue with the formation of a new WG (decided at 69 and initiated at 70) for the agenda item: Reduction of GHG Emissions. Although the number of WGs at the MEPC is capped at five, having simultaneous discussions is problematic for smaller Delegations consisting of only one or two Delegates and they must prioritize what they attend. It is important for Delegations to have a representative in Plenary because this is where decisions are finalized. The outputs of WGs are formally agreed in Plenary, however, directions, terminology and regulations can be defined in the WG discussions so it is preferable to be able to attend all WG sessions at the IMO. By not attending the WGs, small Delegations are not able to embed their own interests and

[53] For example at MEPC69 the attendees under this category were the Faroes and Hong Kong.

[54] Examples from MEPC69 for this category include the UNFCCC, World Meteorological Organization etc.

[55] Examples from MEPC69, for this category include the European Commission, Maritime Organisation for West and Central Africa, League of Arab States, International Mobile Satellite Organization etc.

[56] This means that Member Delegates can invite members of industry as their experts, despite having the Consulting Organisations as part of the Committee.

ideas in the output and instead they must bring these issues to bear in Plenary which can in turn slow the process overall.

The type of Delegates on a Delegation can vary, for example some Member State Delegates included Diplomats and Ambassadors and Members of Transport Ministries among others. They also had differing backgrounds including political, legal, environmental, scientific, technical and seafaring or combinations of these. The selection of Delegates appears to be at the discretion of the Member State or organisation in question. In interviews with Delegates, they explained that Member State Delegations also vary in the autonomy they have at the meeting to change their positions on issues. Some Delegates have the authority to adapt and evolve their positions at the MEPC to a certain extent while others have much less autonomy. One Member Delegate interviewed said they were sure that one large Delegation is not able to change their position during the meeting and so, *'it's difficult to negotiate with them.'*

5.2.5.1 Member State Delegates

Member State Delegations are the most important Delegations; they represent national Registries and take priority over the other Delegations that form the Committee. One participant summed his role as a Member State Delegate:

'As a Delegate I'm responsible for developing [Delegation's name] negotiating positions ahead of all IMO meetings, and developing proposals, analysis of all other Delegations papers submitted to IMO ahead of meetings, maintaining and developing relationships with other IMO Delegates, I guess coordinating positions domestically, I'm responsible for developing research agendas or contributing to the development of research agendas in [Delegation name] that support our engagement at the International Maritime Organization and during meetings I am responsible for conveying [Delegation name] negotiating positions through interventions, dialogue with other Delegations, maintaining relations is probably one of the bigger parts of the job, and I'm responsible for debriefs to senior management and political levels.' (Participant 5: Member State Delegate)

In the run up to an MEPC, Delegates must work on preparing a position, an official stance to take during the meeting. From the interviews, most Delegates felt that the position they go into a meeting with is their ideal and they work to stay as close to that as possible while also attempting to cooperate with the other Delegations and the Chairman and create Consensus. One Delegate said he would approach WG meetings with a sort of, *'playbook'*. It was widely acknowledged in interviews that though meetings can seem pre-scripted at times, it is impossible to know exactly which way a discussion will go and so a level of tactical adaptability is necessary. Preparing positions in advance of the meeting, whether these become a submitted text or not, allows a Delegation to capture the interests of the external actors and networks they represent and then attempt to embed them into the meeting discussions.

In addition to preparing a position and strategy in advance of the meeting, Delegates undertake a process of Outreach. For Delegates that have prepared a submission, Outreach is the process of gathering support and co-sponsorship for the text (this process will be discussed in Chapter 6). For Delegates who are not submitting a text, Outreach is a process whereby Delegates map out the specific positions of other Delegations during the preparation for a meeting in order to help shape their own strategy. To do this, they communicate with their network of contacts. Indeed, in order to facilitate almost all of their work, Delegates must work hard to create connections with other Delegations. Thus, a major part of their role is building and maintaining a network of contacts both during and in between meetings. One Delegate explained that having connections and communicating with them in advance of the meeting allows them to get a sense of the direction the meeting will take. Another Delegate referred to this same process as *'expectation setting'*.

While Delegates undertake this process of position mapping in advance of every meeting, they must also build up a general sense of Members overall positions over time. Member State positions are a result of a number of dynamic factors; government in power, economic state and stage of development, experience of environmental impacts and of course their connection to the shipping industry e.g. registry size, ports and trade flows. Building this knowledge through connections allows Delegates to take

account of *'like-minded'* Member States that they can reach out to for support and information.

In addition to Outreach and creating submissions, Delegates can also draw on their networks of contacts to get a sense of the 'thinking' behind submitted proposals, which may not be apparent due to the brevity of IMO submissions:

'…if you don't have a relationship with any of the individuals in the Member countries it's difficult to get context behind the papers…in a lot of cases, there is a lot of background thinking too, that isn't highlighted in the papers, so you really like to know what other Delegations are really driving towards, beyond what is just written in the papers, so maintaining those relationships is especially useful for that.' (Participant 5: Member State Delegate)

Although every Member has equal rights within the IMO to attend, contribute and vote, external regional groupings such as the EU are also part of the network. They function as both individuals and a collective. The EU members, for example, must adhere to a consistent position agreed in advance of a meeting if the issue concerns a, *'core competency'*. Having contacts as gateways into regions therefore becomes important:

'…that is the benefit of developing relationships with other Delegates and maintaining those relationships…having a couple of good contacts within European Union Member countries is a really good way to get a little bit more inside scoop on what the EU is doing generally.' (Participant 5: Member State Delegate)

Thus, networking and communication is a key part of the Delegates' role. When asked about methods for Outreach a Member Delegate explained, '*…it is pretty unofficial, a lot of it is just development of personal relationships…*' and '*...we have a lot of relationships that you might not see on the floor…'*. In terms of the communication he said, '*...we just have sort of like…friendship-based, most of our conversations are non-*

work related and just sort of get down to business after catching up a little bit'[57]. In addition, another Member State Delegate summarized, '*...personal relationships are a core component of really any multi-lateral negotiation process'.*[58] Multiple Delegates alluded to the importance of trust as facilitative of the process. They noted that the work was easier when carried out in trust and good faith with one Member Delegate going as far as to call the MEPC a, *'framework of good faith'*. A key part of the work of Delegates is to construct their own personal networks to assist them in their work.

Delegates are also responsible for carrying out negotiations. Negotiating activity occurs all year as Delegates communicate with other Delegates through phone calls, emails, other meetings and generate positions, alignments and submissions. During the meeting, however, the work of negotiating, reaches its highest intensity. Delegates capture the interests of their home Government and during the meeting they represent these interests, attempt to embed them in the regulations while at the same time cooperating with others to achieve Consensus. Delegates must use the margin time effectively to communicate with members of their own Delegation, of other Delegations and with their governments or the organisations they belong to. They must also focus also on creating and maintaining their network of connections. Additionally, an interviewee explained that even while they are conducting official negotiations at the current meeting, during the breaks, the Delegates start to plan and discuss their activities for the next meeting. When the meeting is over a Delegate must report back to their Governments and present the outputs and then start to prepare for the next meeting. Thus they act as conduits transporting and representing Governmental interests then reporting on outcomes.

In summary, the role of a Delegate is demanding and varied. They gather and represent interests, black boxing these into an official position. They cooperate to create text submissions while interpreting the submissions of others. They map the field of interests in advance of the meeting while building and maintaining their trust networks. They are strategic networkers and tactical negotiators. Their role requires a high level of

[57] Participant 5: Member State Delegate

[58] Participant 28: Member State Delegate.

shipping knowledge, a legal sensitivity, and diplomatic skill. They are key creators of regulations and they cross the MEPC network boundaries, drawing external interests inside the MEPC and then externally reporting the progress. They simultaneously negotiate in the present and plan for the future. While the role of Delegates from COs is largely similar, there are a few facets worth highlighting, which are addressed in the next section.

5.2.5.2 Consulting Organisations Delegates

From observation and interviews it was clear that the work done by the COs is very similar to the Member States. They capture and represent interests through proposals, commentaries and interventions. The main difference is that in the rare event of a formal vote, the Consulting Organisations cannot take part.

Table 5.1 below presents the number of Delegations in each category at three MEPCs and clearly shows that the CO Delegations, the majority of which are Industry Associations, account for around 30% of the attending Delegations.

Table 5.1: Categories of Delegations in Attendance (Source: Author's Own)

Meeting	Member States	Associate Members	UN and Specialized Agencies	Intergovernmental Organisations	Consulting Organisations
MEPC68	99	2	1	5	53
MEPC69	101	2	3	7	50
MEPC70	97	2	2	4	44

(This table was created using the Participant Lists of MEPC68, 69 and 70)

During an interview, a Delegate explained the level of industry input as unusual compared with other international negotiations:

'…both of my predecessors told me before coming, you will see, the role of the industry is striking here, because it's really exceptional…Uh so, as a diplomat you are a little bit taken aback at first, because you're not used to that at all. Well, in the end, I can say it's probably helpful since, they are the ones which have to be implementing at least part of it…' (Participant 29: Member State Delegate)

Mixed feelings were conveyed about this feature of the MEPC network. Some interviewees felt that there is too much scope for influence from Industry Associations while others felt it was valuable to have the Industry Associations input. A member of an Industry Association summarized the role of his Delegation to provide a practice and implementation orientation to the discussions:

'...we will offer our opinion about different proposals, positions being abdicated, we'll offer information and perspectives about different realities in the industry and how those impact certain ideas or proposals. We also will table specific proposals ourselves for consideration at the meeting' (Participant 15: CO Delegate from an Industry Association)

Environmental Organisations were another main type of CO. In interviews they described their role as representing environmental interests and pushing the Committee to produce more stringent regulations regarding pollution. Sometimes NGOs employed a soft approach by engaging with Delegates during break times and disseminating new research regarding the environmental impacts of shipping. Equally, as one member of an NGO explained, their role is also to take a hard line and *'hammer the table'* if necessary. Beyond this, the NGOs work to comment on the outputs of the discussions both in the meeting itself through submissions and interventions, and externally through their websites.

All Delegates (Members States and COs) are key actors in the MEPC network. They act as *spokespersons* (Latour 2004a) capturing the interests of external stakeholders and synthesizing them into a cohesive position represented in submissions and interventions. They create alignment within the network by cooperating and conceding and they drive the discussions and the creation of regulation forward in new directions. In doing this, they are reliant on the Chairman, the Secretariat, the IMO headquarters, and an assemblage of non-humans. The spaces and people have been covered and so the non-human actors will now be assembled for examination.

5.3 Things

The section identifies and introduces non-human actors in the MEPC network and explains their roles in constructing regulation. This is not presented as an exhaustive

account but instead offers a reflection on key actants that emerged from the data. The actants discussed in this section are *break times, in-meeting huddles, splinter groups*, *technologies* and *documents*. As part of the explanation of their role these actants can be grouped into three types; procedural, technological and textual.

5.3.1 Procedural Actants

This section describes the role of break times, meeting huddles and splinter groups. They have been grouped together as procedural actants due to their facilitative roles in the discussion process. Break times allow Delegates to discuss issues and ideas face-to-face. As such, they enable the network-building activities of the Delegates assisting them to make new contacts, organise work and share information. Due to the practice of having multiple simultaneous WGs, break times also provide a necessary opportunity for Member State Delegates from the same Delegation to catch up and ensure that their positions on various agenda items are coherent, consistent and in line with what had been agreed in advance of the meetings. Other Delegations, particularly NGOs mobilze break times to strategize and plan how they can approach Member States about issues and ideas and provide information on external research and developments.

Carrying out informal discussions during breaks allows Delegates to better comprehend the motivations behind the official positions presented in Plenary. In Plenary and WG discussions, the Delegates are formal, serious and focused. During breaks a more personal side could be seen.[59] Thus, break times are a contrast to the political and technical discussions of Plenary and yet they also allow for Delegates to conduct further discussion that in turn facilitates the construction of regulation. Direct communication and information exchange result in a greater level of understanding between Delegations. In addition, as mentioned in the earlier section about the role of Delegates, during interviews, Member Delegates explained that while they are attending the current MEPC, they are planning future work at break times.

[59] For example, at lunchtime, some Delegates would go to the open deck adjoining the canteen and take photos of each other with Big Ben, the Houses of Parliament and the River Thames behind them.

Break times were also mobilized by the Chairmen of both Plenary and WGs. The WG Chairmen had more discretion over breaks than the Plenary Chairman and could strategically mobilize the smaller coffee breaks in two ways. If an issue seemed to be polarizing the group, the Chairman can, and did, choose to break for coffee and encourage the Delegates to try to resolve conflicts during the break. On the other hand, towards the mid-to-end of the week, the Chairman could, and did, delay or even withhold a break. Coffee breaks could therefore enrolled to resolve controversy and enacted as pressurizers. By either assisting compromise or pressuring the negotiations they act to facilitate the development of regulations.

In-meeting huddles were another facilitative actant that was used during WG meetings and could be mobilized either by the Chairman or the Delegates themselves. When the discussion reached an impasse or began to go in circles, a huddle could be used to effectively reset the discussion and progress ideas. In the MEPC70 WG meeting, huddles were used twice on one day. If the Chairman grants the request the official discussion is suspended while any interested parties gather in the room and converse directly. When standing in this group, there is no Chairman, no microphones and no particular order of speaking. Huddles, like break times, facilitated alternative communication that helped Delegates resolve difficult issues.

Splinter groups are more formal, for example, during the IEEWG a splinter group was scheduled over lunchtime and was open to any Delegate to attend. The group formed in another Committee room and did not use microphones. A CO Delegate from an industry association led the discussion. He stood at the front with a whiteboard mapping out the problem and possible solutions. The issue was resolved and the lunchtime group was able to present their solution to the rest of the WG for consideration and agreement.

When asked during an interview about the role of huddles and splinter groups one Delegate said:

‘*…in an international negotiation, the challenge is to have meaningful conversations, because when you’re doing everything behind a microphone, it’s difficult, and you can go around and round in circles, so I think, to an extent, you can have informal*

discussions where you get people together and you work through a challenging issue…' (Participant 15: CO Delegate from an Industry Association)

The participant added that, '*I don't think it's a good idea that you use an informal work group to figure out some massively controversial highly costly system*' and went on to highlight the negative side of the splinter groups. He noted that a group known as, '*Friends of the Chair*' which had been formed to, '*make headway on the very controversial greenhouse gas issues*' was no longer a feature of the process saying:

'…the current Chairman says, we're not doing that anymore, and I think that's probably a very wise call on his part because when you're talking about a global negotiation and you're talking about something that has tremendous economic consequences, this whole idea of an informal or friends of the Chairman group becomes very problematic. Namely, let's say that group comes up with something, and so the Chairman then comes out and says, well, we've had a group of people together and we've come up with this idea, and this is really the way we should go, it's been a product of hours and hours of discussion. And then all these other people in the room, that weren't part of that discussion, are like, wait a minute, don't start telling me how this is the way we've really gotta go…we didn't have any part of that conversation' (Participant 15: CO Delegate from an Industry Association).

This shows how important the principles of Equality and Consensus are to the MEPC, especially in cases of controversy and contention (which is discussed in Chapter 7). The splinter groups, if enacted effectively can assist in the construction of regulation, however if they are used in a way that undermines the principles of the Organization they can equally hinder progress. As such the mobilisation of splinter groups confers on them the ability to assist, facilitate or hinder the process, making them procedural actants with a role in the creation of regulations. Through the work that they do to facilitate the process of developing regulation, this thesis recognises the agency of procedural actants in the MEPC network.

5.3.2 Technological Actants

In order for the construction of regulation to be successful, the MEPC network is reliant on a digital, audio-visual infrastructure. This section will explain the infrastructure and by doing so, the technological actants are identified and further light is shed on the collective that construct regulation.

One of the most important technological actants is 'IMODOCs'. It is an online facility that holds, amongst other documents, all of the meeting reports, submissions and circulars. This was introduced in the section on the role of the Secretariat but will now be discussed in detail. Registered Delegates of both Member States and COs are able to access and download the documents they need or re-listen to Plenary audio recordings. By making the documents digitally accessible, the Delegates can search for a particular document amongst thousands. This is important as they often draw from historically agreed wordings to amend current draft texts. According to one interviewee, there has been much effort aimed at improving IMODOCs. Even within the research timeframe the user interface underwent a re-design highlighting the importance of the usability of the technology. Documents in the IMO provide information, contain proposals, agreements, and ultimately formalise regulation. IMODOCs provides an archived history of all discussions and decisions while simultaneously assisting in current regulation development.

During the meeting discussion in both Plenary and WGs all speakers use microphones and the audio is routed to the headphones available at every chair. The size of meeting rooms dampens sound, so listening to the discussion without the use of the headphones is difficult. During one WG meeting, the headphone sound system was broken and portable handsets had to be brought in so the meeting could proceed. The audio system allows for clarity, as well as translation in the case of Plenary. Additionally in Plenary video screens show the speaker. This audio-visual infrastructure is used to effectively shrink the room, allowing hundreds of Delegates to clearly see and hear the speaker in several languages at any one time.

The audio discussion in Plenary is recorded and available to registered Delegates after the meeting on the IMODOCs database. This provision is an important feature of the process [60]. As will be discussed in Section 5.3.5, understanding the negotiations that occurred at the meeting from the MEPC report alone can be very difficult as the reports do not name specific Delegations and are very concise summaries of hours of discussion. Plenary recordings therefore provide a resource that allows new Delegates to better understand historic discussions and current Delegates to revisit discussions.

When a WG is drafting a text, they employ further technologies to assist in their work. When drafting text a member of the Secretariat would work on a laptop beside the Chairman. The base document under discussion was on the laptop and being projected onto two large screens at the front of the room so that all Delegates could view it as changes were made. The 'Track Changes' function on MS Word was used and the Delegates worked through the hands of the Secretariat to alter the document. The program tracked the changes made by highlighting them in red and using a strike-though format. At MEPC70, when drafting the roadmap almost all of the text was coloured red after discussion with many strike-through lines. Despite this the Delegates continued to understand and work on increasingly complex paragraphs of text. When the text became too altered and was too saturated with changes to read or when they had reached a natural stopping point, a 'clean' document was requested from the Secretariat. The process of writing regulation involves the ideas and comments of the Delegates, organised by the Chairman, being embedded into a document by the Secretariat in a live textual construction. This also highlights how positions are altered through cooperative input, an idea that will be expanded on in Chapter 6.

In isolation these technologies seem 'mundane' (Woolgar & Neyland 2013) and their contribution perhaps a bit elementary, however, when associated together into a collective they create a technological infrastructure which makes the construction of regulation possible and thus they constitute network actors.

[60] WG discussions are not recorded.

5.3.3 Document Actants: Submissions

An MEPC submission is a document created by a Delegation or Delegations and submitted in advance of an MEPC meeting. Every submission follows a template. See Figure 5.2 for an example of the front page of a submission.

Figure 5.2: Front Page of a MEPC69 Submission

INTERNATIONAL MARITIME ORGANIZATION

E

MARINE ENVIRONMENT PROTECTION COMMITTEE
69th session
Agenda item 7

MEPC 69/7/2
12 February 2016
Original: ENGLISH

REDUCTION OF GHG EMISSIONS FROM SHIPS

International shipping's share in international efforts to limit the rise of global average temperature

Submitted by Belgium, France, Germany, the Marshall Islands, Morocco and Solomon Islands

SUMMARY

Executive summary:	International shipping is called upon to contribute its fair share to the international community's efforts to curb greenhouse gas (GHG) emissions. The co-sponsors invite the Committee to develop a work plan to define this fair share.
Strategic direction:	7.3
High-level action:	7.3.2
Output:	7.3.2.1
Action to be taken:	Paragraph 12
Related documents:	MEPC 59/24: MEPC 67/INF.3 and MEPC 68/5/1

Background

1 On 12 December 2015 in Paris, the international community agreed to common objectives in order to adapt to climate change and mitigate its impact. State parties notably emphasized the urgent need for measures to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels" and committed themselves to "aim to reach global peaking of greenhouse gas emissions as soon as possible" and "to undertake rapid reductions thereafter" (UNFCCC Paris Agreement, Articles 2.1 (a) and 4.1). The Agreement will be open for signature in New York from 22 April 2016.

2 The Organization (IMO) has been taking steps to mitigate climate change for two decades and took first measures to reduce carbon dioxide emissions from a sector that is, in general, the most energy efficient mode of transport (as shown in document MEPC 68/INF.24).

Submissions are headed with the IMO logo. Under this the Committee name, session number and agenda item sit on the left. On the right, there is the document code, date of submission and the original language in which it was submitted. This information allows readers to read submissions thematically by agenda items or historically by session or submission dates. Below the two top columns the full agenda title is displayed. Under this is the document title and below that the submitters are listed. A rectangular box follows which contains an executive summary. The associated strategic direction, high-level action and planned output are then listed, followed by an indication of the paragraph that contains the action requested of the Committee. The final section of the summary box provides a list of related documents. After the summary box is the main body of the document. Due to the amount of documents submitted to meetings submissions tend to be concise and all paragraphs and sub-paragraphs are numbered for ease of reference.[61] Texts therefore, not only organise the work but are highly organised themselves.

On the front page, submissions cite other related documents. In doing so, they are associated into an archival web containing proposals, discussions and agreements. Delegates will often make reference to previously agreed language laid down in reports or other regulatory agreements in order to settle conflict over current wording and vocabulary choices. In this way, documents produce consistency for the network and help to reproduce past agreed wording for current discussions.

There are generally four types of submissions associated with MEPC agenda items:

- Submissions by the Secretariat
- Information papers
- Proposing submissions
- Commentary submissions

[61] Information and research papers that are submitted for the consideration of the Committee can be long and as such are an exception to this.

Examples of Secretariat submissions include reports, updates, schedules, agendas, timetables, document lists etc. These submissions organise and frame the MEPC in terms of time, content and context. Time is structured by the agendas and schedules. The content of the meeting is also organised by the agenda, as well as the list of submissions and previous MEPC report. The meeting is framed by the updates and reports from external events; for example, the Secretariat gave reports of the outcomes of the United Nations Climate Change Conferences held in Bonn and Paris at MEPC69. Therefore, the discussion at the meeting is framed by the international environmental and political context represented in submissions.

Information papers draw in external research and scientific reports to the MEPC for consideration in connection with developing regulations. The research can be contracted by the Secretariat, Member governments or COs. These papers request only consideration of their contents from the Committee. Both the updates and reports from external events by the Secretariat and information papers presenting external research draw the 'outside' in and connect the internal discussions in the MEPC to wider global-political and scientific developments.

Some submissions contain proposals. They introduce a topic of concern, lay out a background and request that the Committee considers the information within and takes action accordingly. This submission type will be the basis of three case studies in Chapter 6.

The final type of submission is a commentary paper. Commentaries relate to submitted proposals and just as their name suggests, comment on proposals. In doing so, they set out the position of their sponsors. By responding to proposals or specific points in proposals commentaries are a way to open a textual dialogue in advance of the meeting. All Delegations can make information submissions, proposing submissions and commentary submissions although participants from COs stressed that 'tabling' a proposal is much easier if the submission is also co-sponsored by a Member State.

During interviews most participants stressed the importance of submissions in the MEPC. Proposing submissions are the channel through which Delegations can present an idea and generate discussion. Although the process of developing regulations is continuous and on-going, submissions, in particular proposing submissions, represent points of opening or change. By their nature, they are able to open up black boxes in the regulatory process. In doing so, they can also create controversy and those that propose amendments or a review of current regulations create moments of unmaking and reconstruction. Submissions, therefore, punctuate the cycle of discussion and fuel it with new material.

When a group of Delegations create and co-sponsor a submission, they form a supportive network around the text, inputting their interests and ideas into the document. The submission is altered by the co-sponsors during its drafting according to their interests. Submissions can therefore also be understood as boundary objects (Star & Griesemer 1989). They connect networks capturing their shared interests and as they circulate between co-sponsors they are shaped and modified.

Submissions can also be understood as representative actants. Their role is to lay out the ideas, views and official positions of their sponsors in advance of the meeting until the Delegates themselves are able to come together at the meeting. Submissions initiate dialogue and open the negotiations. The text submissions, just like the Delegates, act as representatives for the interests of others. After the meeting passes, the submissions become archived as new submissions for future meetings take up the representational role.

In summary, submissions are *unboxers*, capable of opening up taken-for-granted issues or indeed re-opening black-boxed regulation for review and amendment. Secretariat submissions organise the meetings and draw in external events providing a contextual framing for the discussions. Submissions from Delegations act as boundary objects during their drafting, linking different networks of interest and fluidly moving between them. Upon submission, they become representational actants charged with embodying the interests of their authors and beginning the negotiations. At the conclusion of the

meeting they become records, fossilizing co-sponsor networks and proposals in IMODOCs. Submissions, therefore, have multiple roles that evolve as they act in the MEPC.

5.3.4 Document Actants: Meeting Reports

Meeting reports reflect the main elements of discussion, the decisions made and suggestions for the work that needs to be done at the next MEPC meeting. The Committee reports follow a consistent structure.[62] The reports are bullet-pointed and succinct. Delegation names are omitted from the report and general vocabulary is used to indicate levels of support, opposition or other comments. An exception to the practice of not naming specific Delegations is made if a Delegation requests their statement be annexed in the meeting report. This can be the case if a decision has been made but a Delegation still want to formalise their opposition.[63] Reports were generated by the Secretariat within the timeframe of the meeting, which often meant they were worked on during break times and at night. The last day of discussions, whether in Plenary or WGs, is spent going through the report point by point, sometimes line by line, correcting, improving and changing it until it represents the Consensus of the meeting. Thus, report checking is a process of creating Consensus of Consensus; agreeing that the report accurately reflects the agreements of the meeting.

The report must synthesize days of discussion into a concise overview of the meeting. As such, reports were simultaneously a watered down version of the lively discussions and a distillation of the main discussion points. For those who attended the discussions, it provides a helpful summary. For those who did not attend the meeting, it can be difficult to get a full sense of the discussion, and nearly impossible to tell what position was held by what Delegation. One CO Delegate explained that this is why he attends the meeting in person. Reports also link meetings, encasing decisions and carrying them

[62] WG reports are similar to the Committee report but with the addition of a participant list at the start of the document.

[63] Delegates may request any statement to be annexed in the report but during observation this was only done when a Delegation wanted to formalise opposition.

forward to the next meeting. They are a physical manifestation of consistency, formalizing the discussion and providing a base from which future work is carried out. The following section will summarize the agency of texts in the network.

5.3.5 Textual Agency in the MEPC

This section has contributed to the understanding of the empirical work centring on what texts do in organisations (Cooren 2004). Documents have multiple roles in the construction of regulation and even change roles at different stages in the process. They play a clear role in strengthening network associations (Callon 1991; Law 1986b). Submissions can be seen as boundary objects (Star & Griesemer 1989) and *intermediaries* moving between actors, strengthening and defining relationships (Rydin 2012). MEPC documents overall can be understood as sociolinguistic actors in a political system which can, '*encapsulate complex multidimensional world-views, visions of the future, invocations of key actors, introductions of constraints and opportunities [and] rules about acceptable behaviour and risks*' (Faulkner 2012, p755).

General IMO documents, such as the establishing Convention are constitutive of the Organization, while submissions are generative of the regulatory work and reports *perform* the outcomes of the meeting as much as they encapsulate it (Fauré et al. 2010). Similar to Latour's social aggregates, the outcomes of the meeting are, '*made by the way they are said to exist*', i.e. how they are written up into the reports (Latour 2005, p273). Furthermore, both submissions and reports build on the information of past meetings and documents. As such, they construct an archived web of information, creating an institutional memory of past meetings and consistent framing for current and future meetings. The coding and format of the documents allow readers to trace a temporal or thematic history, in essence, providing a genealogy of the development of regulation.

While this research has aimed to understand the agency of texts in the MEPC, a limitation of the documents was also observed and is offered as an extension to the work focused on textual agency in organisations (Cooren 2004). Many Delegates explained that a large part of their role is constructing and maintaining social networks

and trust. ANT encourages the examination of heterogeneity, however, the 'social' networks of trust between Delegates remain a homogenous association in the MEPC. These connections exist only between Delegates and are not captured in regulatory texts. Despite this, the trust between delegates is seen as facilitative of the process of developing regulation.

Due to the level of influence texts have in the MEPC, they can be viewed as key actors in creating control or governing at a distance (Law 1986b; Rydin 2012). As such, the next chapter follows the process of creating submissions and then traces three submissions through three MEPC meetings.

5.4 Conclusion

This chapter aimed to answer the first research question, *'What actors and associations constitute and perform this network?'* Although it does not present an exhaustive list, three actor categories were identified; *spaces, people* and *things* and within these categories a multitude of actors have been assembled and accounted for.

The *spaces* of the Headquarters are an essential part of the network, simultaneously capturing and promoting the principles and practices of the Organization. Describing the role of *people* showed Chairmen to be far from passive vessels. Indeed, they were active constructors, skilfully orchestrating the discussion towards Consensus. The Delegates drive the discussion, representing a mass of external interests, solving problems, producing ideas, supporting, opposing and compromising. The Secretariat organises the meeting, assisting every actor to carry out their roles. They also disseminate and report the work done at the IMO in other international fora. In this way they represent and link the IMO to wider structures of international governance.

There are many influential *'things'* working in the development of regulation. These actants were identified as procedural, technical and textual. Procedural actants facilitate and stimulate understanding, negotiation and compromise. The technological infrastructure makes the work of other actors possible. The textual actants have multiple roles throughout the process. Submissions reflect the roles of their creators, with the

Secretariat's submissions organizing, scheduling, and linking the discussions to external contexts while Delegates' submissions propose ideas, open up negotiations, and represent interests. MEPC reports capture days of discussion and decisions and formalise Consensus while also linking to future meetings.

This chapter has offered an empirically rich account of actors involved in constructing regulation that is currently lacking in the literature focused on the IMO. The following chapter will give an equally detailed account of the processes of the MEPC by using three case studies to explain how international shipping regulations are developed.

6. Building and Converging Networks: Following Submission and Discussion Processes in the MEPC

6.1 Introduction

Applying ANT to empirical settings involves not only the identification of actors and their roles but also the following of the processes that bind these actors together (Latour 1999b). The actors that assemble periodically to form the MEPC were unpacked and discussed in the previous chapter. This chapter moves on to follow, and thus explain, two processes of constructing regulation. First, the process of creating submissions is examined and then the process of discussion at the meeting is detailed. The sociologies of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013) are applied as terminological framings for the data narrative. These vocabularies are used to sort the network-building processes into moments or stages and therefore help to ascertain the levels of support, resistance and overall outcome. Both submission and discussion processes are attempts to translate, i.e. they are attempts to transform an idealized proposal into a practiced reality (Callon 1986a).

Before going on, it is necessary to revisit the meanings of translation and treason discussed in Chapter 3. The term *translation* refers to the process of building, controlling and maintaining a network (Callon 1986a). Change and re-shaping are implied but the overall aim of translation is to construct a network and make the translator's agenda a reality. Translation is key to understanding networked control. The term *treason* refers to the construction of weakness i.e. the action of a group of actors, distorting agendas, weakening and locking other actors out of the network (Galis & Lee 2013).

The first part of the chapter examines the general process of creating a *proposing* submission as an act of translation, i.e. network building. The main body of the chapter is dedicated to presenting three MEPC discussions as small case studies. The case studies are anchored to the plight of the Marshall Islands as they propose the creation of new GHG reducing regulation and attempt to grow a network of support across

MEPC68, 69 and 70. The chapter finalizes with a discussion of the data and contributes to the application of the sociologies of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013).

6.2 Creating Submissions

This section examines the general process of creating and submitting proposals. The data has been ordered into the four moments of translation (Callon 1986a). Over the course of the three case studies presented, the chapter follows the development of a proposal from the Marshall Islands and the growth of their network of support across 17 months and three MEPCs, from MEPC68 in May 2015 to MEPC70 in October 2016.

6.2.1 Problematization

The first stage of translation, problematization, occurs when a Delegate or group of Delegates problematizes a situation and forms a plan or agenda that they would like to see realized. At this stage, they draft a text. Within this text, the interests and agenda of the problematizer(s) are embedded. Problematization can occur at any time. It can happen during an MEPC in break-times or between MEPCs. Problematizations can be formed in reaction to the last MEPC discussion, developments in the industry, global environmental governance trends or to the findings of new scientific studies. Proposing submissions in the MEPC are the embodiment of a problematization; an ideal around which to gather a network of support:

'…in a lot of ways your objective…is laid out in the submittals or submissions to the MEPC...I think most anyone would characterize their submission as at least that country['s] or that Delegation's ideal, or outcome that they view as a reasonable'
(Participant 28: Member State Delegate.)

The creation of a proposing submission is part of the overarching aim to gain support and agreement during the meetings themselves. As such the initial problematization is the beginning of a potentially long and slow process, indeed one Delegate advised that Delegations should be prepared to sacrifice their first submission as part of a longer

strategic process of constructing and mobilizing support and, '*figuring out how to advance your agenda, within the rules that you are given'* (Participant 28: Member Delegate). In summary, problematization is the creation of a desired outcome in the form of a proposing submission.

6.2.2 Interessement

Interessement and enrolment can happen simultaneously and the lines between the two may blur. In the case of this research it is important that the terms remain distinct. Interessement, is the process of engaging actors and aligning their interests with those of the problematizers (Callon 1986a).

After the initial problematization, the Delegates generally undertake a process they call 'Outreach', whereby they attempt to build a network of support around the submission. This process is important for the creation of a proposal with the potential to gain majority agreement during discussions[64] as a Member Delegate explained:

'…there's a process of getting other countries on board…and it's generally viewed - the more countries you've assembled to support you…the better chance that you have to get the outcome that you are seeking…'
(Participant 28: Member State Delegate)

Outreach occurs largely through correspondence through emails and conference calls although delegates may also meet in person.[65] One interviewee explained the process of initiating Outreach. In this quote the importance of personal networks to Delegates and their role as strategic networkers, which was discussed in Chapter 5 is re-emphasized.

---

[64] There are two forms of Outreach, the strategic position mapping that was described in the previous chapter and the strategic network building around a submission.

[65] Delegates sometimes use other international fora (e.g. UNFCCC, EU and ICAO meetings) as an opportunity to meet and discuss MEPC business.

'...if you've got a standing relationship, we'd go directly to a Member State if we know them already on that basis, or if we wanted to reach out to someone where we might not previously have done so we'd maybe go through diplomatic networks…so there's various routes open to us but, yes, we spend a fair amount of time on the outreach.'
(Participant 3: Member State Delegate)

Selecting actors to support a text is a highly strategic activity. Much consideration goes into who should be included with various factors affecting this choice. Delegates try to engage actors based on two main factors, similarity of position or intentions defined by the interviewees as, *'like-mindedness'* and interest level in the particular agenda item the proposal is being submitted under:

'...on any given issue, there are a small subset of Delegates in the room that care more about certain issues than others...they are the ones that you want to focus on…'
(Participant 28: Member State Delegate)

Awareness of like-minded Delegations is gained by analysing past interventions, past and current submissions and direct communication with delegates during the MEPC in the margins or by intercessional correspondence. Through these methods knowledge of other Delegations' positions is created. A problematizer is not likely to engage a Delegation that is active on an issue if their position is in total conflict to the agenda of the problematizer. For example, the issue of Outreach consultation was raised during the MEPC69 Plenary discussion of Reduction of GHG Emissions. A network of regionally close Small Island Developing States, along with some other more distant Member States, was criticized by one Member State Delegation from the Central/South Pacific region for not seeking their input. However, the content this submission was in contrast to the past interventions of the discontented Delegation. As such, they would not be considered 'like-minded' and so would not be asked to co-sponsor. This underscores the politics and tensions that must be negotiated in the process of translating an agenda into a mobilized network of support.

While the problematizer is attempting to identify common interests, at the same time, they need to select difference. Strength of support does not necessarily come down to number of co-sponsors; network diversity plays a role as well. The strongest network of support that can be built around text is one that has multiple countries in different states of economic development representing diverse regions of the world. Participants explained that the more support you have going into the meeting, the more support you are likely to gain during the discussion. Thus, interessement is a very strategic undertaking that requires time and focus and is an essential part of building a network of support. Once the '*interessed*' parties have been gathered around a text, it is time for the third stage: Enrolment.

6.2.3 Enrolment

Enrolment is the stage where the problematizers assign roles to those who have been '*interessed*' into the network as an attempt to further solidify network connections (Callon 1986a).

During Outreach, there are two roles to be assigned in connection with a submission; co-sponsor or dormant supporter[66]. All co-sponsors are supporters but not all supporters co-sponsor. Co-sponsors are named alphabetically on the submission. As such, positions of co-sponsors are formally and visibly fixed to the text, making co-sponsoring a less flexible form of support than those who chose to remain invisible until the meeting[67]. Once the meeting has passed these co-sponsor connections become historic and for the network to remain co-sponsors must re-associate around submissions at future meetings. The problematizer does not always initiate enrolment, Delegations can also volunteer or request to co-sponsor. Dormant support occurs when a Delegation is generally supportive of the text and indicates its intention to vocalise this support in discussion yet does not wish to co-sponsor the submission:

---

[66] The term co-sponsor is an official term however the term dormant supporter is one I have assigned on the basis of the data. It is used to describe the type of role these actors take.

[67] The term invisible is used here to convey that dormant supporters are not named on the paper.

'...we've also been participating in, contributing to papers over the summer which [we are] not a formal sponsor of, but that you will find us supportive of when the time comes.'
(Participant 3: Member State Delegate)

Co-sponsorship must be defined before the document is submitted to the IMO while dormant support can be gathered (and offered) after submission. One reason for a Delegations choosing to be a dormant supporter instead of co-sponsoring is that they may agree with the content of the submission in principle, but have one or two specific points that prevent them from putting their name to it as a whole. The process of enrolment is similarly strategic to interessement with roles carefully assigned.

6.2.4 Mobilization

The final stage, mobilization, is when the network begins to function as one, held together as a collective and moving towards the realization of the agenda of the initial problematizer (Callon 1986a). Mobilization occurs during the discussions when the entire network of co-sponsors and dormant supporters vocalise their support for the submission.

The discussion presents a new opportunity to grow the network of support by convincing actors to align with the submitted proposal. The aim is to show the support gathered during Outreach as well as to persuade the rest of the Committee to support the proposal. However the discussion is also an opportunity for actors outwith the submission's network of support to test the strength of the network by showing resistance and building a network of opposition.

To frame the push and pull of the negotiations and offer a rich account of the discussions the vocabularies of translation (Callon 1986a) and treason (Galis & Lee 2013) have been applied to explain the construction of networks of support and opposition respectively. Within the context of the MEPC and the IMO in general, distortion (i.e. the first stage of treason which involves re-problematization) can occur in two ways. Delegations can either submit a commentary text that distorts the initial

actors problematization or they can use the discussions to verbally re-problematize and distort the issue. Both translation and treason represent actors pushing and pulling in a state of flux as they seek to assert their agendas.

The following case studies trace the translation and treason attempts around three submitted proposals with a common purpose. The first submission was submitted by the Marshall Islands who then built a supporting network of co-sponsors for the following two submissions.

6.3 Case Studies

This section introduces three submissions and follows them into the MEPC discussions. Submission 68/5/1, sponsored by the Marshall Islands was chosen as an opening into controversy (Venturini 2009). From there, the network growth of the Marshall Islands and the translation of their proposal were traced by following submissions to MEPC69 and MEPC70. Table 6.1 below presents the key submissions in the three cases. As discussed in the chapter 4, although MEPC68 occurred before the start of the fieldwork, I was able to analyse submissions, the meeting report and Plenary transcript of the meeting in order to present this case alongside the others.

Table 6.1: Key Submissions Followed

MEPC	Submission	Date Submitted	Sponsors	Title
MEPC68 11th-15th May 2015	68/5/1	20th March 2015	Marshall Islands	Setting a reduction target and agreeing associated measures for international shipping
MEPC69 18th – 22nd April 2016	69/7/2	12th February 2016	Belgium, France, Germany, the Marshall Islands, Morocco, Solomon Islands	International shipping's share in international efforts to limit the rise of global average temperature
MEPC70 24th – 28th October 2016	70/7/6	19th August 2016	Antigua & Barbuda, Belgium, Côte d'Ivoire, Denmark, France, Germany, the Marshall Islands, Monaco, Morocco, Solomon Islands, Tonga	International shipping's share in international efforts to limit the rise of global average temperature – further clarifications

6.4 Case study 1: Submission 68/5/1

Despite climate change being at the forefront of environmental governance discussions[68], Submission 68/5/1 was one of only three submissions under the agenda item: Reduction of Greenhouse Gases from Shipping. The first submission was a report by the Secretariat on the outcomes of the United Nations Climate Change Conferences

[68] The Paris COP 21 was scheduled for 30th November to 12th December 2015 and was at the forefront of discussions in the MEPC.

of 2014 and 2015. The other submission was an information paper from the Republic of Korea about their domestic introduction of a greenhouse gas mitigation scheme for ships. Section 2.1 in Chapter 2 explained that the Marshall Islands is the second largest ship registry in the world which is important to context submission 68/5/1. Although the Marshall Islands are a Small Island Developing State (SIDS), it represents a large proportion of registered ships.

The Foreign Minister of the Marshall Islands, Tony deBrum, flew to London to introduce Submission 68/5/1. Some interviewees explained that the presence of Tony deBrum signalled the seriousness of the issue of the Marshall Islands. In his evocative speech detailing the plight of the Islands, he explained how the sea, once a provider of food and facilitator of transport, depended on by the Marshallese, now floods the Islands due to the rising sea levels linked to climate change. The submission he introduced requested a global reduction target for shipping emissions to be set.

The document entitled, 'Setting a reduction target and agreeing associated measures for international shipping' was submitted on 20th March 2015 in advance of the MEPC68, which was held 11th-15th May 2015. The two excerpts below present the main aim of the submission.

> In this submission, the Marshall Islands provide the justification for and request the Committee to undertake the work necessary to establish a GHG emission reduction target for international shipping consistent with keeping global warming below 1.5°C and to agree the measures necessary to reach that target.

The Marshall Islands makes this submission to IMO in recognition that it is now essential for the United Nations agency charged with responsibility for regulating international shipping in the interests of the global community and future generations, to take ambitious and decisive action to address the climate impacts of shipping. Specifically IMO needs to set clear net emission reduction targets in line with the UNFCCC's ultimate objective to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

(Excerpts from MEPC68/5/1, submitted by Marshall Islands)

This submission is a proposal-type submission and represents a problematization of new regulations as a response to global climate change. The submission draws in scientific evidence and invokes the negotiations of the Paris Climate Agreement in its attempt to engage support. There were no co-authors and one participant explained that the process of Outreach for this submission had not been evident:

'…the Marshall Islands had this Reduction Target paper out...that caught everybody by surprise a few weeks before MEPC and if they had reached out in a different way, maybe the community could have responded in a different way but at that point, when we saw the paper, it was so late…If they had talked to us and said, 'look I have this paper, would you co-sponsor it?' a lot of countries would, may have been interested in co-sponsoring it' (Participant 35: Member State Delegate)

This highlights the need to conduct a thorough and strategic process of Outreach to construct a network of support in advance of the meeting. The participant also added:
'It would have helped at least if the paper had more co-sponsors…but it was kind of a very…I guess an alone attempt, and that was not helpful' (Participant 35: Member State Delegate)[69]

At the time of this submission, GHG emissions related discussions in the IMO had converged around considering a review of the EEDI and the construction of the DCS.

[69] Equally, it is possible that the Marshall Islands had their own reasoning for not undertaking Outreach.

The MEPC's direction on climate change appeared to have been black-boxed until submission 68/5/1 opened the box and requested the MEPC begin discussions anew on a global target. The next section follows the discussion of this submission.

6.4.1 MEPC68 Plenary Discussion

Using *translation* and *treason* as framings, the reactions to the proposal in Plenary are explained. From this, it is possible to show how within the MEPC Committee, sub-groupings of Delegations form networks of support and resistance in an attempt to translate their interests into a majority Consensus.

Since this thesis takes the Marshall Islands submission as the focus, Delegations that express support for the proposal will be termed *supporters* and Delegations that attempt to reject the proposal will be termed *resisters*. Some Delegations fall in between these two extremes, whereby they express support for the proposal but they also suggest that it should be altered in some way. Again this is an attempt to translate their own interests in the discussion and these Delegations will be termed *modifiers*. These terminological categories were created as helpful descriptors to untangle the reactions to the proposal in the Plenary discussion.

These categories will be applied throughout the three case studies and will illustrate the changing positions with regards to the submissions of the Marshall Islands; as they reform their proposal and gather more co-sponsors, their network of support in discussions also grows.

The Marshall Islands' introduction of their submission took nearly ten minutes. Vanuatu made a shorter, but supportive, intervention. After this, the Chairman gave the floor to the Secretary General of the IMO. Part of his speech was dedicated to reminding the Committee of the work already being done by the MEPC with regards to reducing emissions. In particular, he mentioned the EEDI and his view that the EEDI is, itself, a reduction target that will produce emission reductions over time. He went on to note the complex position of Shipping as a servant of world trade. This framing reduces the accountability of the industry for its emissions. The logic is that if world trade grows, so

too will the international shipping industry and by default its emissions. This often emphasized by the industry when discussing environmental regulation.

The Secretary General ended his address by urging the Committee to consider what the IMO has achieved, what it can do and what message it may be able to disseminate at COP21. The invocation of the external forum of the COP21 in Paris, the congratulatory comments regarding current regulations (EEDI and SEEMP) and the connection of shipping as a servant of global trade were themes that recurred throughout the ensuring discussion.

After the Secretary General had spoken the floor was opened for Member States' interventions. Many Member States expressed sympathy for the position of the Marshall Islands and with some expressing a cautious level of support, however, many Members equally undertook a distortion of the proposal. Some Member States supported the integration of this proposal in on-going and future work. Others explicitly prioritized the finalization of the DCS before turning focus on the proposal in this submission. The creation and adoption of the Data Collection System is part of a Three-Step Approach; (i) Data Collection, (ii) Data Analysis and (iii) Decisions on the need for further measures to enhance energy efficiency from ships (Hughes 2016) and is discussed under Agenda Item: *Further Technical and Operational Measures for Enhancing Energy Efficiency of International Shipping*. For an expanded explanation of the Three-Step Approach see Appendix 5.

The interventions contained general support for the core of the proposal but at the same time attempted to *distort* it. The distortion of MEPC 68/5/1 took a few different forms. Many Members highlighted the EEDI and SEEMP as major achievements and contributions to the reduction of emissions. Inherent in this was the question of whether more regulation is actually needed. Some Delegations felt that in time current measures would produce effective reduction of emissions in Shipping. Others enrolled the Paris COP to help their cause, explaining that it would be best to wait for the outcome of the Paris discussions before taking action on the request of the proposal. These vocalizations were made in advance of COP21 when it was thought that Shipping might

be included in the Paris Agreement and the right to regulate Shipping appropriated by that Agreement. These Delegations were effectively mobilizing an external global environmental governance meeting to postpone the current discussions of a global emissions target for the shipping industry.

Two Delegations felt that the proposal was not in line with the then current discussion and that it might actually inhibit future achievement or have the opposite effect of what is desired. These two members believed that this proposal could divert attention from the DCS and thus hamper it. Other resisters pondered the negative impacts on trade and the challenges faced by certain economies if a reduction target was placed on global shipping. One organisation invoked the UNFCCC as a barrier, stating that the provisions of the UNFCCC are of a 'single undertaking' and that 'individual provisions' in a 'sectorial approach' would be in conflict with this. Another Delegation further invoked the UNFCCC and Paris COP to suggest that the proposal was premature. All of the arguments above constituted resistance to the proposal. As the discussion proceeded, *resisters* began to align themselves with the statements above by specifically naming the Delegations that vocalized them.

Submission 68/5/1 did not gain enough support to be taken forward in the form of the action requested of the Committee. Though there was sympathy for the proposal and iterations of support, there were many attempts to modify the proposal and a strong network of resistance formed. In the sociology of treason, the process of distortion, *'makes the Other's agenda seem uneconomical, illogical, untimely, or unsound. For every constructed " obligatory passage point," there can be a number of " points of irrelevance" that thwart actors in their desire to define a problem'* (Galis & Lee 2013, p160). In this case study, both the modifiers and the resisters used timing, organisational focus, and economic impact as a *distortive framing*, making the submission a *'point of irrelevance'* (ibid). Thus, the proposal in submission 68/5/1 was rejected. A successful process of treason however did not take place. Although the submission itself was rejected from the network, the Marshall Islands were not and cannot be. The Marshall Islands were able to redraft a new proposal for MEPC69 and the next section follows this new submission through MEPC69.

6.5 Case Study 2: Submission 69/7/2

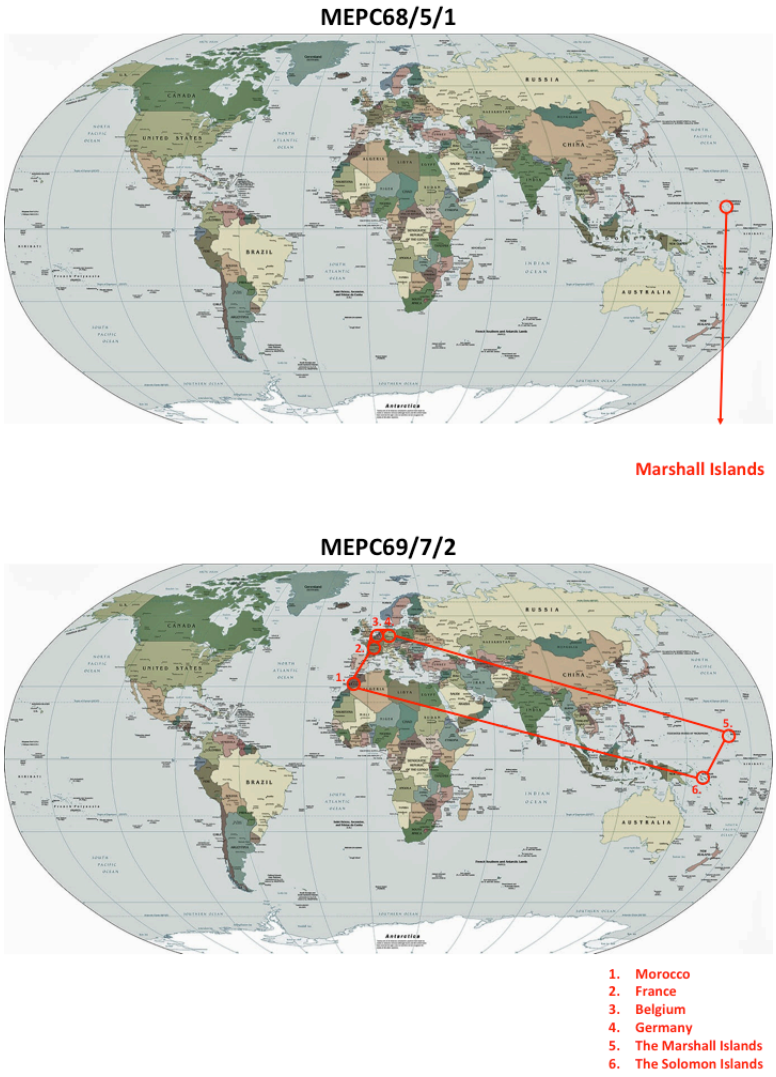
Submission 69/7/2 was submitted to MEPC69 on the 12th of February 2016 under agenda item 7: Reduction of GHG Emissions from Ships. The submission entitled, 'International shipping's share in international efforts to limit the rise of global average temperature', was submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands. Its summary states:

> International shipping is called upon to contribute its fair share to the international community's efforts to curb greenhouse gas (GHG) emissions. The co-sponsors invite the Committee to develop a work plan to define this fair share.

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

This submission can be seen as an extension of submission 68/5/1. Notably, this submission had a much larger network of support in the form of the co-sponsors, which in turn gave it a better chance of acceptance during the meeting. Diversity of region and development, two desirable traits for *supporters* were embodied in the co-sponsorship. Figure 6.1 presents the construction of a network from MEPC68 to MEPC69.

Figure 6.1: Network Growth from MEPC68 to MEPC69 (Source: Author's own)



MEPC69/7/2 began by reminding readers of the Paris COP and the upcoming signing of the Agreement. It went on to note the steps the IMO had already been taking to mitigate CO_2 emissions. The paper emphasized the length of time since the last discussion on targets took place back in 2003. A key word from 68/5/1, '*target*' had been dropped entirely and the words *'fair'* and *'share'* were used in this submission. MEPC69/7/2 represented an attempt to rebrand the MEPC68 submission in more agreeable packaging.

The document simultaneously associated and disassociated with 68/5/1:

> ‘More recently, at MEPC68, the Marshall Islands invited the Committee to continue discussions on how to define shipping's share (MEPC 68/5/1). This document also addressed other aspects, but it is not the intention of the co-sponsors to address all aspects in this document.’

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

The document displaced the ‘outside’ and brought it inside the MEPC in its iterations of global efforts and time, constructing these as persuasive pressure points, in an attempt to ‘interesse’ (engage) readers and align them with the text, thereby potentially enrolling them as supporters. The co-authors inserted quotes from the UNFCCC Agreement to further the persuasive alignment of the MEPC with wider international governance approaches. In addition, regulation is constructed as a market-stimulating device:

> ‘The long-term objective would give a clear signal to the whole sector, create investment stability and stimulate research and development.’

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

This construction could be construed as an appeal to *interesse* the Industry Associations into aligning with the proposal. The shipping industry is an incredibly cost-focused one and problematizing regulation as economically stimulating is a tactic to gain support. The submission alluded to the threat of tougher future requirements if action is not presently and negative impacts on global trade and vulnerable countries. The co-sponsors also laid out some aspects for the work plan:

> The co-sponsors are of the view that the following aspects should be included in a work plan for development, discussion or decision:
> .1 the methodology to be used to define the required emission reduction effort of international shipping;
> .2 the type of GHGs that should be covered;
> .3 the reference years;
> .4 the long-term objective; and
> .5 the intermediary steps.

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

The co-sponsors also used this submission to pre-empt resistance in Plenary, based on the interventions at MEPC68, by stating:

> 'This work plan does not interfere with the MEPC's agreed three-phase approach (MEPC 68/21, paragraph 4.8) or the deliberations on the data collection system. The efforts to define a fair share should be one part of an overall strategic approach to tackle the GHG emissions of the shipping sector. While the data collection system can be consulted in the future as an up-to-date inventory, it need not necessarily play a role in defining the fair share.'

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

However, this pre-empting was not entirely successful which will be made clear in Section 6.5.2 where the proposal is followed in the Plenary discussion. The document concluded with a paragraph which contained a final invocation of the 'outside', a call-to-arms type of statement, a nod to vulnerable states, a mention of equity and fairness, before it finished with the statement:

> We trust that IMO is the organization best equipped to take on this challenge.

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco, and Solomon Islands)

At the time that MEPC69/7/2 was submitted, the IMO's responsibility to regulate was being undermined by the rise of regional regulation, for example the EU Monitoring, Reporting and Verification System (EU MRV) (see Section 2.7). This statement reminds the Committee of the pressure to produce effective outputs or risk having its authority as a regulator destabilised. The next section examines the other submissions made under Agenda Item 7 in MEPC69, paying particular attention to those commenting on 69/7/2 either in support or opposition to it.

6.5.1 MEPC69: Other Submissions

This section examines the other submissions of MEPC69. These submissions lay out the positions of their sponsors and as such they open the process of translation and treason in advance of the meeting. The categories applied in Case Study 1 are reapplied here in order to organize the data and understand how the sociologies of translation and treason apply in the empirical setting. The three categories are:

1. *Supporters*: Delegations/interventions that supported submission 69/7/2 with no or almost no changes.
2. *Modifiers:* Delegations/interventions that support the essence but attempt to re-shape details of the proposal.
3. *Resisters:* Delegations/interventions that are in opposition to the proposal, attempt to re-problematize/distort the situation and grow their own network of resistance.

Already a difference can be observed between MEPC68 and 69. Along with submission 69/7/2, and excepting the Secretariat submission there were four other submissions to MEPC69 under agenda item 7, which illustrates the work that MEPC68/5/1 did to open up the GHG controversy and discussions of a target (as a MBM). Table 6.2 shows the submissions discussed.

Table 6.2: Other MEPC69 Submissions

Submission	Submitted by	Title
69/7	Secretariat	Outcomes of the United Nations Climate Change Conferences held in Bonn in June, August and October 2015 and Paris in December 2015
69/7/1	International Chamber of Shipping (ICS)	Proposal to develop an "Intended IMO Determined Contribution" on CO2 reduction for international shipping
69/7/3	Clean Shipping Coalition (CSC)	An appropriate IMO response to the Paris Agreement
69/7/4	WSC (World Shipping Council), CLIA (Cruise Lines International Association), INTERTANKO and IPTA (International Parcel Tankers Association)	Establishing a process for considering shipping's appropriate contribution to reducing CO2 emissions

The submission by the Secretariat was a simple update. The other three submissions were from COs, one from an NGO and two from Industry Associations and are discussed below.

Submission 69/7/1

The International Chamber of Shipping (ICS) is the principal international trade association for the shipping industry. Their submission was a proposal for the MEPC to proceed on reducing CO_2 emissions in the wake of the Paris Agreement:

> 'ICS proposes that the Organization should develop an Intended IMO Determined Contribution on CO2 reduction for the international shipping sector as a whole, taking account of the UNFCCC (COP 21) Paris Agreement'

(Excerpt from MEPC69/7/1, submitted by ICS)

It was submitted before 69/7/2, and does cite 68/5/1 as a related document. The submission began by asserting that the message from the UNFCCC COP21 and the following Paris Agreement was clear, that all sectors of the global economy are expected to peak CO_2 emissions as soon as possible, before eventually decarbonizing completely. It went on to say that since the work on the DCS in the IMO is almost complete, ICS supports MEPC68/5/1 *'in principle'*. The document then states:

> 'An expectation that international shipping should somehow decarbonize at the same rate at which developed nations have committed to decarbonize their economies in their INDCs[70] would therefore be inconsistent with the "spirit of Paris" and the principle of differentiation as set out in Article 2 of the UNFCCC Paris Agreement.'

(Excerpt from MEPC69/7/1, submitted by ICS)

This statement raises the tensions between the IMO's regulatory principles and those of other regulatory networks (see Chapter 7 for further discussion). ICS also stated concerns over low carbon fuel availability for Shipping stating that it will probably depend on fossil fuels for several decades. The rest of the submission is then spent proposing that the Committee follow the direction of the Paris COP and agree to develop and adopt an, 'IMO Intended Contribution'. The absence of the word *'target'*, used in MEPC68/5/1 is notable. ICS re-problematizes their own ideal, the IMO Intended Contribution, and the reasoning behind it:

> 'ICS suggests that the term Intended IMO Determined Contribution is appropriate because the concept of reduction targets has not been applied to individual Parties under the UNFCCC Paris Agreement. This avoids the implication that some kind of sanction might follow any reduction target not being reached, which was one of the key reasons for the success of COP 21 and consensus being achieved among all nations. ICS sees no reason why the international shipping sector should be treated differently, and notes that binding global targets have not been developed for any other industrial sector.'

(Excerpt from MEPC69/7/1, submitted by ICS)

[70] Intended Nationally Determined Contributions

This submission works to represent the industry interests in the regulatory process. Although it does align with the essence of 68/5/1 in that it argues for the creation of new CO_2 reduction regulations in the form of an industry-wide contribution, it also constitutes a re-problematization by offering a different terminology, drawing in issues of regulatory principles and fuel availability.

Submission 69/7/3

This submission made by the CSC[71] suggests four key areas in which the MEPC can make progress if it is, *'to remain relevant and respond in an appropriate and timely manner to Paris'*. These are:

> '…agreement on a work plan to identify shipping's fair share of GHG emission reductions, continuation of work leading to revised phase 2 EEDI requirements, agreement to advance consideration of measures for existing ships including MBMs and adoption of a transparent global MRV system.'

(Excerpt from MEPC69/7/3, submitted by CSC)

This text, submitted after MEPC69/7/2, works to support both it and the original MEPC68/5/1 proposal. The submission enrols 'Paris' by quoting directly from the Agreement to construct a persuasive pressure. It also quotes the ICS submission in an effort to connect together the possible alignments between the core of submission 69/7/2 and 69/7/1:

> 'For the International Chamber of Shipping (ICS) "the message from the UNFCCC Conference (COP 21) and the Paris Agreement is clear. All sectors of the global economy are now expected to determine how they can reach peak CO2 emissions as soon as possible before eventually decarbonising completely" and it agrees "that international shipping must play its full part in contributing to this objective"'

(Excerpt from MEPC69/7/3, submitted by CSC)

[71] The CSC are a coalition of the organisations: AirClim, Bellona, Clean Air Task Force, Environmental Defense Fund (EDF), Transport and Environment (T&E), Oceana, Seas At Risk, Stichting De Noordzee and Nature and Biodiversity Conservation Union (NABU).

The CSC made use of the terminology '*fair share'* which associates their submission as a *supporter* of MEPC69/7/2 and they conclude with the statement:

> 'The decisions that MEPC 69 takes on these issues will be a "litmus test" of the IMO and its Member States' determination to play a meaningful role in the fight against climate change.'

(Excerpt from MEPC69/7/3, submitted by CSC)

Echoing MEPC69/7/2 this statement challenges the MEPC. The CSC make it clear that they consider this meeting to be decisively indicative of how the MEPC will choose to regulate CO_2 in light of the Paris Agreement. The submission supports both the past submission 68/5/1 and the current submission 69/7/2 though it also works to provide a wider criticism of the current state of IMO MEPC regulation.

Submission 69/7/4

The final submission, a commentary paper, is from four industry associations. Rather than explicitly supporting 69/7/2, the co-sponsors state that they:

> '…support an open, structured and deliberative process to consider what should be the long-term carbon objective for international shipping. A process such as that outlined in document MEPC 69/7/2 could initiate that discussion, although in our view the proposed schedule would require adjustment to reflect the complexity of the subject matter.'

(Excerpt from: MEPC69/7/4, submitted by WSC, CLIA, INTERTANKO and IPTA)

Therefore, this submission is a *modifier*. It is vaguely supportive of the notions of MEPC 69/7/2 yet equally the co-sponsors hope to modify the timetable of the proposal. They also comment that the DCS should remain a priority and in this way they modify the contents of 69/7/2 as something that is better postponed until the DCS is completed.

Despite the differences and modifications, all of the submissions go some way to support and align with the core ideals of 69/7/2. Treason, it seems, is not so simple in

the IMO. Efforts to reproblematize (i.e. distort) do not change the proposal entirely, but attempt to nudge it in slightly different directions according to the agendas of the submitters. The submissions begin to reveal that growing a mobilized network in the MEPC and successful translation require a process of negotiation, modification and dilution of the initial problematization. The next section will examine the MEPC69 Plenary discussion and sort the interventions into three categories: *supporters, modifiers*, and *resisters*.

6.5.2 MEPC69 Plenary Discussion

The discussion began with a short comment by the Secretariat about their participation and representation of IMO in UNFCCC meetings in the lead up to COP21. Following this, a member of the UNFCCC Delegation gave a detailed update about COP21, the resulting Agreement and the expectations upon the MEPC in the wake of these events. A UNFCCC Delegate also emphasised the aim to keep global temperature rise below 2 degrees, with the highly desired limit having been established as 1.5 degrees. The need for industry sectors to do their part to peak emissions as soon as possible and move towards a decarbonized state was also iterated. The Delegate highlighted that the agreement has some differentiation between countries of differing states of development and vulnerability and that the emphasis is on cooperation.

After the UNFCCC Delegate spoke, the Secretary General made a short speech lauding the achievement of the Paris Agreement, but also noting the IMO's own achievements and finishing with a reference to the EEDI. Introductions of submissions followed this. In the case of the joint submissions the Solomon Islands and the World Shipping Council introduced 69/7/2 and 69/7/4 respectively. For the most part, the introductions summarized and re-iterated the main points of the submissions following the order listed in Table 6.2. Notably ICS took the opportunity to assert that the ideas contained in their submission should be carried forward and discussed at MEPC70 rather than during MEPC69. The floor was then opened for comments.

Not every Member made an intervention and so there are certain states that sit outside the networks, being neither a *supporter, modifier* nor *resister*. Due to confidentiality

requirements of the IMO as have been addressed Section 4.9.5, Member States cannot be named in connection with their interventions or directly quoted. As such, this section constructs an overview of the main arguments associated with the categories above.

Category 1: Supporters

Member States in this category voiced their admiration for COP21 and the Paris Agreement as a progressive step forward. Their interventions showed support for Submission 69/7/2 and attempted to persuade further Delegations to support the proposal. Generally, they drew on scientific research concerning climate change and expressed empathy for the problems facing low-lying vulnerable islands, such as the Marshall Islands. Timing was constructed as a pressure device and often enrolled along with the Paris Agreement in an attempt to gather support. Many also commented on the need to show 'the world' i.e. the world outside of the shipping industry that the IMO is accepting the responsibility to progress CO_2 reductions further. There were a few interventions that included a comment about failure to agree to fulfil 69/7/2 in the wake of Paris being an indication of the unsuitability of the IMO to regulate the international shipping industry.

Category 2: Modifiers

Delegations falling into this category were supportive of the need for further discussion and work on reduction of CO_2 emissions but also attempted to modify the proposal in 69/7/2. *Modifiers* suggested prioritizing finishing the DCS by focusing on it during MEPC69, thereby delaying full discussion of 69/7/2's proposal until MEPC70. This was even done by ICS with their request to forward their own submission to MEPC70. The attempt to modify the proposal was to reframe the request to develop a *'fair share'* as part of a three-step process already underway in the IMO. This would push the discussion of a '*fair share'* back years, until after the data collection and analysis stage of the DCS regulation were complete. Those supporting this temporal distortion emphasized the need for any policy decisions to be based on 'real' data (rather than projected). Some modifiers also drew on the argument that Shipping as a servant of trade is not entirely in control of its own emissions because in responding to rising demand for their service, their emissions rise in relation. The issue with the *modifiers* is

that while they are not attempting a process of treason, i.e. to completely lock the Marshall Islands proposal out of the network of discussion, they often attempt to change the agenda to a point beyond recognition.

Category 3: 'Resisters'

Although the majority of Delegations fell into category 1 and 2, there were some resisters. The Members in this category distorted the proposal and attempted to create a network of opposition to ensure the rejection of 69/7/2. The *resisters* built their opposition on various reasons. One distortion was that the proposal was premature. Another re-problematization involved the issue of harmonizing different environmental regulatory principles, namely the principle of Common But Differentiated Responsibilities (CBDR), which is external to the IMO, and the principle of Non-Discrimination, which is held by the IMO. These principles will be discussed fully in Chapter 7. Resisters argued that the principles would need to be reconciled in the MEPC before any discussion of assigning fair share could take place. In essence their distortion amounts to the harmonization of two principles which, at their core, are in opposition. In order to do this, any discussion of fair share would need to be postponed. Thus, their distortion is a temporal one.

These Members also reframed and enrolled the 'Paris' discussions to point out that shipping, by serving trade demands, helps the growth of poorer and less developed economies. Resisters expressed concerns that regulations that sanction or restrict Shipping in any way, could damage these countries. Some also expressed displeasure at the thought of multiple agenda items with intertwining content. As noted in Chapter 4, there are three agenda items in the MEPC with relevance to emissions.

Resisters did not support the proposal in 69/7/2 or further discussions of it. Three of the resister Delegations requested their statements be annexed to the MEPC report. Two statements from Brazil and India were in English and one statement from Argentina was written in Spanish. The content of these statements can be used to illustrate the resistance to 69/7/2 more clearly.

The statement from Argentina opens by aligning with its network of opposition, i.e. China, Brazil, Panama and India. It continued by raising the issue of CBDR and the need to prioritize the DCS before finishing by re-problematizing the proposal as premature. Brazil draw upon the conflicting regulatory principles in their resistance:

> ‘Important political decisions remain unaddressed by IMO, both at a technical and a political level, including the right balance to be struck between the basics principles of 'common but differentiated responsibility' (CBDR) and non-discrimination.
> The provision for nationally determined contributions (NDC) is at the core of the Paris Agreement. Proposals to establish a global target for ships of all countries, indiscriminately, would fail the principles and provisions of the UNFCCC because they disregard the differentiation between developed and developing countries.’

(Excerpt from MEPC 69/21/Add.1 Annex 17, page 6)

Brazil noted the role shipping plays for developing economies and felt that economic impact of regulation must be considered:

> ‘Furthermore, we urge the Committee to consider the impact of any measures adopted by IMO on international trade and the development of all countries, in particular developing countries, that already pay 40 to 70 per cent more on average for the international transport of their imports when compared to developed countries, according to the 2015 Review of Maritime Transport published by UNCTAD.’

(Excerpt from MEPC 69/21/Add.1 Annex 17, page 6)

Brazil suggested that the impact of current measures should be assessed before any discussion of adopting new measures. They closed their statement with a declaration of resistance:

> At this time, Brazil cannot support the launch of negotiations on a sectorial target for international shipping."

(Excerpt from MEPC 69/21/Add.1 Annex 17, page 6)

India reiterated the need to assess the impact of current measures and the need by the Committee to address questions of maintaining the balance between:

> '…the basic principles of 'common but differentiated responsibilities and respective capabilities' (CBDR – RC) and non-discrimination'

(Excerpt from MEPC 69/21/Add.1 Annex 17, page 7)

They went on to echo Brazil about the vital role of Shipping in facilitating world trade and social and economic growth and finished with the statement:

> We also support (in principle) views expressed by distinguished Delegations of China and Brazil."

(Excerpt from MEPC 69/21/Add.1 Annex 17, page 7)

Although a minority, the resisters have tightly associated their network of resistance and formalised it in the meeting report. The following section focuses the outcome of MEPC69 by tracing the discussion of the Chairman's summary and attempts to bring the divergent interests to Consensus.

6.5.3 MEPC69 Outcome

Much of the Plenary discussion was spent with Delegations debating whether or not there was a need to open a discussion about further measures to reduce CO_2 and initiate a work plan. After hearing all interventions, the Chairman read out an eight-point summary of the discussion. This summary would go into the meeting report and so would become a record of the discussion, points of majority agreement and the basis of the work for the next meeting. The points of summary (paraphrased) were:

1. The IMO welcomes the achievement of Paris discussions and the Agreement as a major achievement.
2. The Committee emphasizes that current methods to enhance energy efficiency adopted by the IMO are recognized and commended.
3. It is recognized that further appropriate enhancement of shipping can and should be pursued.

4. The IMO commitment to the Paris Agreement is recognized.
5. There was understanding that approval and adoption of the DCS was a priority.
6. The three-step approach of data collection, analysis and decision-making is acknowledged.
7. The development of a work plan for an appropriate long-term objective for the Organization should be properly structured and also should consider the issues raised in the extensive debate.
8. Details of the work plan would be considered at MEPC70 with the establishment of a WG which would take into account all documents submitted at this session 69 and invite further proposals for MEPC70.

Name cards, signalling the wish to speak, immediately went up. As the interventions were made, it was clear that the room was split. Most Delegations agreed with the summary however resisters signified disagreement with points 7 and 8. In response to this, the Chairman called for a break appealing to the Delegates to be constructive in helping him summarize the discussion.

The meeting resumed a short while later. The Chairman began by taking each point individually and opening the floor for its discussion in order to identify the points of controversy. There was wide agreement for all but points 7 and 8. The Chairman suggested that some Delegations were attempting to open up the actual debate again, rather than comment on the correctness of the summary. One resister claimed that there had not been majority support for the creation of a work plan. Another resister intimated that the Chairman may have been letting his personal bias feed into his summary. Although the Chairman replied politely, the atmosphere became tense at this comment.

Discussions in the IMO need to reach a Consensus decision. There was a network of support for both points remaining and a network of resistance calling for the removal of both points. As such, the Chairman suggested a compromise in the form of keeping only point 8. He reasoned that not only was this a compromise, but that due to the discussion today, the lack of decision and the points raised, there was a clear need for further

discussion, and that would best take the form of a WG at MEPC70. After some further interventions this was finally (and reluctantly by some) accepted.

In the final analysis, Submission 69/7/2 was not translated unaltered. It underwent reframing and re-problematizing and was ultimately modified before it was taken forward. While a work plan was not agreed at MEPC69, the establishment of a WG for this discussion at MEPC70 represented a successful compromise. The main modification desired by modifiers was postponement, which was achieved. The WG also provides a further forum for modifiers to rework future proposals and embed their interests. Those who sought to reject i.e. treason 69/7/2 were not able to, however, their resistance stalled action and the further discussion would provide them new opportunity for attempts build opposition.

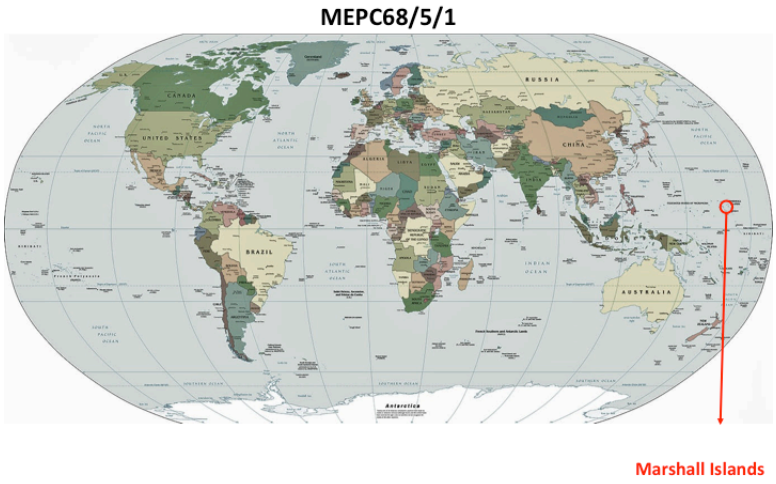
Network growth in the MEPC comes at the price of diluting and changing your agenda in order to progress through the stages of translation. Therefore, networking is simultaneously strengthening and weakening the problematizer's agenda. Even though the network for support was larger and more diverse than the network of resistance, the problematizers did not gain a position of durable power in the MEPC. Equally the resisters, though able to stall the proposal, could not reject any co-sponsor from MEPC as the sociology of treason would suggest. Prior to discussing the relevance of these findings in relation to the literature, the next section details the third and final case.

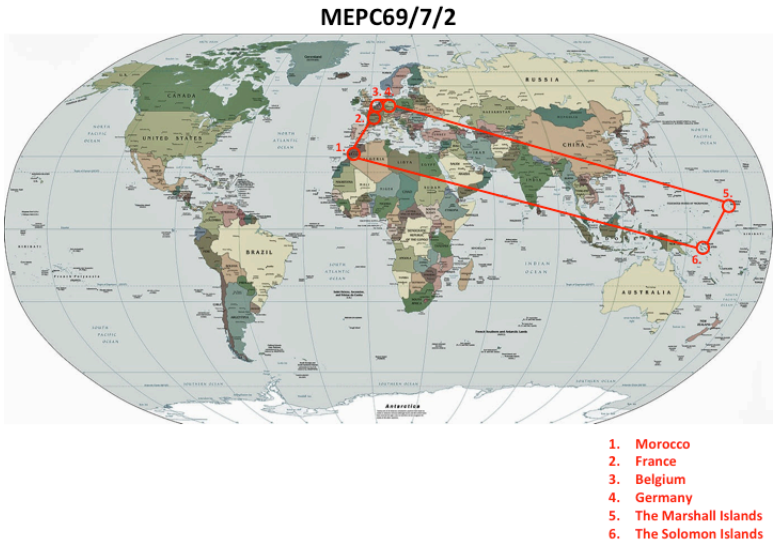
6.6 Case Study 3: Submission 70/7/6

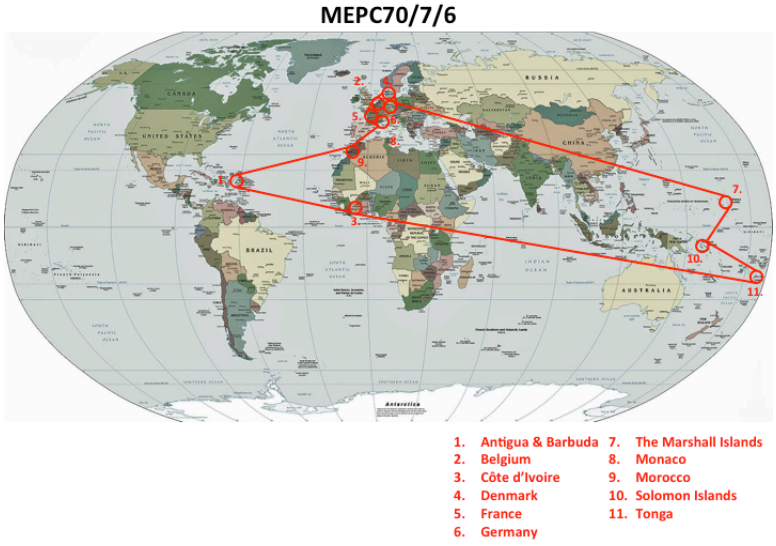
The submission entitled, 'International shipping's share in international efforts to limit the rise of global average temperature – further clarifications' was submitted on the 19th August 2016 by Antigua and Barbuda, Belgium, Côte'Ivoire, Denmark, France, Germany, the Marshall Islands, Monaco, Morocco, Solomon Islands and Tonga. The network co-sponsoring Submission 69/7/2 had been extended to include five new members. This network is a careful balance of regional diversity and economic development making it a strong network, as discussed in Section 6.2.2. The representation of different states of economic development by the co-authorship may have been a response to one of the arguments of the resisters in MEPC69; that

regulations sanctioning or restricting shipping activity could result in damage to the economic growth of less developed countries. If the vulnerable states themselves put their name to the proposal, it throws doubt on this argument. Indeed the submission repeatedly states that agreement on a *fair share* will not, itself, increase transport costs. Here, the attempt to reshape the content of submissions to *interesse* further support can be seen. The support network that surrounded 69/7/2 did not achieve its aim without undergoing moments of modification and resistance. However, the network did not collapse or disperse. Instead they remained together, gathered new members and drafted a new text. Thus, the attempt to translate their agenda goes on. The figure below presents the network growth from MEPC68 to 70.

Figure 6.2: Network Growth from MEPC68 to MEPC69 (Source: Author's own)







Submission 70/7/6 responded to the MEPC69 debate and reiterated the need for the IMO to define a 'fair share'. It clarified the complimentary connection with the DCS but provided a separate timeline for the fair share discussions. As mentioned it states that transport costs will not increase by assignment of a fair share. The co-sponsors, therefore, enrol the document to pre-empt and alleviate concerns, which could be used to '*treason*' the proposal.

The document raises the possibility of launching the discussion of a fair share immediately, using available data and then supplementing this with new data gathered from the DCS:

> Preliminary discussion of shipping's fair share could be facilitated using currently available data (e.g. from IMO's GHG studies), with further refinements and calculations informed using data obtained from IMO's data collection system. In this way, the fair share discussions can be informed by and benefit from IMO's three-step approach, but can progress immediately'

(Excerpt from MEPC70/7/6, submitted by Antigua and Barbuda, Belgium, Côte'Ivoire, Denmark, France, Germany, the Marshall Islands, Monaco, Morocco, Solomon Islands and Tonga)

The submission made a time-based appeal to further assert the core of the argument:

> Where other countries will review their commitments in 2018 and 2020, the three-step approach alone would not permit IMO to reach any outcome before 2021-2023 but a combination of the two concepts will allow the Organization to show progress and prove leadership in this issue.

(Excerpt from MEPC70/7/6, submitted by Antigua and Barbuda, Belgium, Côte'Ivoire, Denmark, France, Germany, the Marshall Islands, Monaco, Morocco, Solomon Islands and Tonga)

The document finished by inviting the Committee to consider the fair share proposal to reduce GHG emissions and develop a work plan and timeline to define that share (see Appendix 6 for Timeline).

6.6.1 MEPC70: Other Submissions

There were fifteen submissions under agenda item 7 with the case submission 70/7/6 being the 6th. This section will discuss the submissions that lay out support, modification or resistance to 70/7/6. As such, the submissions discussed have been narrowed to 70/7/3 – 70/7/5 and 70/7/7 – 70/7/14. While the codes denote the chronology of the submissions, this section has been structured thematically. The section begins by discussing the *resisters*, moving on to *modifiers* then to *supporters*.

Submission 70/7/4 was co-sponsored by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay. As was discussed in the case study of MEPC69, Brazil and India were *resisters* to the original fair share proposal. Submission 70/7/4 considered a possible future measure that might result from the 'fair share' or 'contribution' discussions, an overall emissions cap. The submission then went on to suggest an alternative:

> Rather than setting an absolute reduction target or an overall cap, IMO should focus its contributions on further enhancing energy efficiency and encouraging the uptake of alternative fuels.

(Excerpt from MEPC 70/7/4, submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay)

The submission emphasized shipping as a facilitator of trade and quoted a previous IMO Secretary General:

> '…measures aimed at reducing shipping's overall contribution of CO2 emissions, such as a global overall cap, "would artificially limit the ability of shipping to meet the demand created by the world economy, or would un-level the level playing field that the shipping industry needs for efficient operation, and therefore must be avoided.".'

(Excerpt from MEPC 70/7/4, submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay)

The submission went on to question the need for discussion under agenda item 7 and prioritized the work on the DCS. By doing this they were attempting to cast doubt on

the need for the WG, which had been determined at MEPC69. Thus this submission captures and continues the resistance of these Member States to the proposals of the Marshall Islands et al. and constitutes an attempt to *distort* and *reject*.

Submission 70/7/7 by the Republic of Turkey also represents *resistance*. In it they attempted to dissuade the Committee from discussion of further instruments until the DCS system is finalized, implemented and provides the Committee with data. On this basis they included a timetable that delayed a decision about further measures until 2024. They posited the IMO as a promoter for increasing efficiency and using alternative fuels, rather than a regulator and boldly framed shipping itself as a CO_2 mitigation measure:

> …using of shipping instead of other transport modes on the purpose of reducing GHG emissions is of itself main preventative measure in the world.

(Excerpt from 70/7/7, submitted by Republic of Turkey)

As with most *resister* distortions, emphasis was placed on economics and growth:

> '…any measures to be taken to limit the emissions of shipping…should not suppress the growth of international shipping in any way. Within this scope, we would like to call the attention of the Committee to this sensitive issue to plot the sector's route with a Turkish proverb by asking: Is our main goal to eat grapes or to beat the grape grower?'

(Excerpt from 70/7/7, submitted by Republic of Turkey)

Moving on from the *resisters* the *modifiers* will now be presented starting from the submissions that suggest the highest level of modification though postponement, to proposals with a lower level of modification. Submission 70/7/8 was co-authored by a network of industry associations, among them, ICS, the organisation that proposed the IMO Determined Contribution in MEPC69 (Submission 69/7/1). Submission 70/7/8 begins to integrate the wording 'fair share', combining it with the wording of ICS to produce a proposal for a 'fair share contribution':

‘The following submission proposes the development of a road map to determine a possible IMO fair share contribution on CO2 emissions…’

(Excerpt from MEPC70/7/8, submitted by BIMCO, ICS, INTERCARGO, INTERTANKO and WSC)

This submission also criticized the ‘unrealistically high’ CO_2 scenarios, used to model future emissions trends in the Third IMO GHG Study[72] and prioritized obtaining the data from the DCS before taking any decision. This would push any decision on measures further back than 69/7/2 and 70/7/6 proposed. The co-authors, like the Republic of Turkey, positioned shipping as a CO_2 mitigation method itself, and seemed to suggest that the IMO should keep shipping as an attractive option for trade before considering limitations:

‘Shipping is already, by far, the most energy efficient form of commercial transport. Any increase in shipping activity due to a shift from other less efficient transport modes will in fact contribute to an overall reduction in the world's total CO2 emissions. On the other hand, an unrealistic contribution to reduce the sector's absolute CO2 emissions could lead to a shift to less energy efficient transport modes…The opportunity to switch from land and air based transport modes to shipping should be encouraged.’

(Excerpt from MEPC70/7/8, submitted by BIMCO, ICS, INTERCARGO, INTERTANKO and WSC)

Although there are clear efforts to modify the proposals of 69/7/2 and 70/7/6 through postponement and reframing, there is still an acknowledgement that more work on reducing CO_2 is needed. The submitters use the terminology Road Map thereby associating with 70/7/4, however despite the supportive rhetoric of the submission, the modifications suggested in the submission take it towards a similar level as the preferences of resisters.

Submission 70/7/8 was supported by submission 70/7/9; a commentary submission from the International Association of Ports and Harbors’ (IAPH) and again by submission 70/7/12 from industry association Cruise Lines International Association

[72] The GHG Studies are comprehensive research studies commissioned by the IMO.

(CLIA). Together these three submissions capture the views and proposals of 7 key Industry Associations. The three submissions are supportive of further work to reduce GHG emissions however they also *modify* and *distort* the timetable by postponing decisions until after the establishment and application of the DCS.

Three MEPC70 submissions were *supportive modifiers*. Submission 70/7/3 by Japan proposes development of a GHG reduction target based on the energy efficiency of ships. As such, the submission represents a general acceptance of the need to define a 'fair share' target and proposes a methodology to achieve this making it a *supportive* and *modifying* submission. Norway and the United States co-sponsored submission 70/7/5 which proposed the development of a long-term strategy to address GHG emissions from ships:

> We share the view that IMO should provide a long-term vision for the sector on how to reduce greenhouse gas emissions, but question whether IMO should solely focus its efforts on defining a target.
> Rather, the co-sponsors propose that the IMO develop a long-term strategy…The process of developing a long-term strategy would include discussions of a long-term target, but its primary focus would be to provide tangible outputs to guide near- and long-term action and investments throughout the sector.

(Excerpt from MEPC70/7/5, submitted by Norway and United States)

This submission is a *supportive-modifier* because it supported the core aim in 69/7/2 but repackaged the work in a different form. There are many similarities to the 'fair share' proposal, however, the submission moves emphasis away from only working on a target for the industry and towards an accumulation of reductions through different measures under the banner of a long-term strategy. The submission envisioned completing development of this strategy by 2018.

The International Cargo Handling Coordination Association (ICHCA) suggested that the Committee take account of the approach of ICAO[73] in its attempts to reduce emissions from the aviation industry in submission 70/7/10. The ICAO approach involves a strategy to progress technology, operations and uptake of alternative fuels, with the remaining reductions coming from a carbon-offsetting scheme. This submission is supportive with the core aim of 70/7/6, and offers a modification through a possible methodology.

Two supporting submissions were 70/7/11 and 70/7/14. Submission 70/7/11 by the CSC welcomed the increased amount of attention under agenda item 7. They echoed their MEPC69 submission (69/7/3) by criticizing the EEDI levels, and the level of transparency of the DCS. They asserted the need for the 'fair share' discussion to be a priority of MEPC70 with enough time and resources dedicated to it. Essentially, they remained a *supporter* of 69/7/2 and 70/7/6. They went on to raise concerns about the level of ambition and timelines of some of the MEPC70 proposals and warned that postponement may be detrimental:

> The later action is taken, and some are suggesting that no new measures are agreed or even discussed for 10 years, the harder it will be for the industry to adjust.

(Excerpt from MEPC70/7/11, submitted by CSC)

The final submission by Canada, 70/7/14, commented on 70/7/3, 70/7/4, 70/7/5, 70/7/6 and 70/7/7. They supported discussion immediately and the original timeline in 70/7/6. Their only reservation was the terminology 'fair share'. Canada stated that they would prefer the ICS terminology of 'IMO Determined Contribution'. They also supported part of the Japanese submission, particularly the idea of an ambition cycle. This submission therefore falls into the category of *supporter*.

[73] ICAO is the International Civil Aviation Organization. It is also a UN specialized agency like the IMO, but deals with air transport.

Submission 70/7/13 was a commentary co-sponsored by most of the original problematizers. Submitted by Antigua & Barbuda, Belgium, France, Germany, the Marshall Islands, Monaco, the Netherlands, the Solomon Islands and Tonga it represented an extension of the problematization of 70/7/6. Interestingly, some of the co-sponsors of 70/7/6 (Denmark, Morocco and Côte d'Ivoire) were not named as co-sponsors to this submission and we also see a new addition of the Netherlands. The submission built on the work of 70/7/6 and attempted to answer *resistance* and correct some *distortions*. The co-authors made use of stabilized and archived past precedent, and attempted to persuade the resistors that they have historically been in line with the fair share terminology:

> '…it is noted that document MEPC 69/7/2 is not the first introduction of fairness to the IMO MEPC discussions on GHG. For example, in document MEPC 57/4/27 South Africa stated that "shipping should contribute fairly to reducing GHG emissions, but there is no global emission measure to align a reduction target for the shipping sector with yet." In document MEPC 57/21, India's statement was referenced: "India expressed the view that any IMO framework on GHG emission reductions from shipping should: have a shared vision for long-term co-operative action, including a long-term goal for emission reductions; contribute fairly to the ultimate objective of the UNFCCC in accordance with its provisions (…)".'

(Excerpt from MEPC70/7/13, submitted by Antigua & Barbuda, Belgium, France, Germany, the Marshall Islands, Monaco, the Netherlands, the Solomon Islands and Tonga)

The co-authors also suggested some methodologies for defining a 'fair share contribution' from shipping. For the most part, the document was concerned with overcoming distortions and resistance. They re-iterated a point from their earlier submission, that assigning a 'fair share contribution' would not automatically increase transport costs.

In summary, two submissions showed outright resistance, three Industry submissions were supportive in rhetoric but heavily modified the timescale of 70/7/6. Three submissions were supportive modifiers and two submissions showed support. There

were many attempts to modify the proposal in 70/7/6 from its wording, to the aim and timeline. At the same time, in modification, there is also acceptance. The increased amount of submissions shows that the work of the Marshall Islands has focused the attention of the Committee on this issue. Equally, the resistance shown in MEPC69 remained strong and the network of resistance contained the same Delegations. The following section traces the reactions to the proposal in the Plenary discussion at MEPC70.

6.6.2 MEPC70: Plenary Discussion

The majority of the Plenary discussion was spent with the Delegations vocalizing support for the proposals, emphasizing particular points and explaining their reasoning. The process took hours and towards the end the Chairman requested that Delegations shorten their interventions. Some Delegations brought up releasing the WG as soon as possible to begin their deliberations, which emphasizes time as a limiting factor for controversial discussions that the Chairman must work around, echoing back to Section 5.2.3 in Chapter 5.

During Plenary there was majority support for submission 70/7/6. Many interventions specifically supported its timeline and nearly all supporting Delegates felt that discussions under this proposal could start immediately and in parallel to the three-step approach of the DCS. Some supportive Delegations specifically stated they could not support submissions 70/7/4 and 70/7/7 (i.e. the resisters). Other Delegations supported the proposal but distorted the time line, placing the decision at the time of the third step of three-step approach. There was also support for the Norway-United States proposal (70/7/5), with one Delegation suggesting that it might be a bridging document between submissions and another Delegation later supported this positioning. Here again, we can see that translation requires modification and a combination of compromise and dilution. The resisters mobilized their own network of opposition to speak against the progress 70/7/6 and similar proposals, continually re-iterating their network Members and their arguments.

From the above, it is clear that submissions can pre-script a meeting however at this Plenary, the Cook Islands introduced a new element for discussion; the creation of a standalone group to address reduction of GHG emissions from ships. The Delegate from the Cook Islands requested the statement to be annexed to the report. The reasoning by the Cook Islands was that:

> 'The MEPC cannot continue to operate as it has in recent years, with all the emphasis and now all the working groups dedicated to one issue, namely the important but contentious issue of GHG emissions from international shipping. This has been to the detriment of proper and timely consideration of the many other and more traditional issues that are clearly within the Committee's mandate and can no longer be considered acceptable. We must, in recognizing the importance of these highly charged issues, show some vision and accept that for the Organisation to fulfil its destiny and not get bogged down in endless standoffs…In our view the best approach is not to continue having working groups that are clearly linked and working in parallel**.** This has the effect of denying smaller delegations**,** most notably the SIDS and LDC members most at risk from the effects of climate change, the opportunity to engage fully in the process, regardless of the number of committee meeting days allocated.'

(Excerpt from MEPC70/18/Add.1 Annex 22, page 7)

The suggestion was to:

> '…to send a clear and unambiguous signal to other agencies that we are in control, and to demonstrate that the Organization can rise above the vested interests and inflexible procedures that have and may continue to inhibit progress on these sensitive and contentious issues, we must consider allocating adequate time and space for these specific discussions to take place. To our mind this can only be done by establishing a **"Standalone Group"** considering **"Further measures to reduce the carbon footprint of international shipping""**'

(Excerpt from MEPC70/18/Add.1 Annex 22, page 7; original emphasis)

Although this gathered some support, this construction is a modifying distortion. Setting up a new stand-alone group would take time, discussion, planning and organisation. Thus, the focus would be transferred away from the proposal of assigning a fair share itself and towards the logistics of the establishment of the new group. It could take months or years to establish the group and only then would the focus return the subject of fair share. Indeed, discussion of this suggestion ended up taking hours of the limited time of the WG, yet nothing was decided or established and so the concept had to be side-lined in order to make some progress on the original proposals. This particular show of resistance took the form of diverting and stalling the discussion. Once the Chairman had heard all interventions, the WG was then 'released' to go about its work.

6.6.3 MEPC 70: Working Group Discussion

The 'Terms of Reference' for the WG that were set in Plenary are shown below:

> **3 WORKING GROUP ON REDUCTION OF GHG EMISSIONS FROM SHIPS**
>
> **Agenda item 7 – Reduction of GHG emissions from ships**
>
> Taking into account the comments and decisions made in plenary at this session and at MEPC 69, and the documents submitted to this session (MEPC 70/7/3, MEPC 70/7/4, MEPC 70/7/5, MEPC 70/7/6, MEPC 70/7/7, MEPC 70/7/8, MEPC 70/7/9, MEPC 70/7/10, MEPC 70/7/11, MEPC 70/7/12, MEPC 70/7/13 and MEPC 70/7/14) and those deferred from the previous session (MEPC 69/7/1, MEPC 69/7/2, MEPC 69/7/3 and MEPC 69/7/4), the group is instructed to:
>
> .1 consider how to progress the matter of reduction of GHG emissions from ships and advise the Committee as appropriate; and
>
> .2 submit a written report to plenary by Thursday, 27 October 2016.

(MEPC 70/WP.2)

The WG Chairman had been in both the MEPC69 Plenary discussion and MEPC70 Plenary discussion of agenda item 7. He had taken note of the interventions and combined these with the commonalities amongst submissions to create a 'base document' for the group to start working on.

The group proceeded to discuss the various elements of the base document, from the title, dates, goals, and level of ambition. Although the Chairman had advised the group to avoid getting 'bogged' down in terminology, long periods were spent debating

precise terms or wordings. The MEPC's reliance on past precedent or agreed wording means that great efforts are made to consider possible interpretations of a particular word or phrasing and adjust according to the interests and aim of the group. The WG discussions were long and ended at around 23:40 on their first night and went all the way to 01:30 the next (having started at 08:30).

The Cook Islands' proposal of a stand-alone group was raised and there was general agreement with the concept. The discussion of a standalone group took up valuable time (most of the first evening) without the group being able to agree on details. As such it could be construed as a tactical move to divert the discussion and so use up some of the limited time. As time went on it became clear that the idea required much more discussion and so the group decided to side-line the option (though not reject it) with the aim of making some immediate progress on the original submitted proposals.

From there, points of controversy during the complex discussion included the timeline, activities, dates, and emphasis on SIDSs and LDCs in the base document. The second day of discussing and drafting the document was the longest. The discussion in the WG ebbed and flowed between moments of translation and moments of resistance echoing those discussions from Plenary. There was much discussion on the availability of current data to assist in policy making and its usefulness. Some were of the opinion, as already seen in Plenary discussions, that only data from the DCS could be used to make decisions.

The issue of harmonizing CBDR and non-discrimination was revisited by some Delegations. Later in the evening a Delegate from a CO sitting beside me commented, sotto voce*, 'they are going in circles'* and began to pack up to leave. Other Delegates trickled out as it got later. The remaining Delegates pushed on and achieved Consensus on a timeline which was annexed to the WG report to be agreed in Plenary on the last day of the MEPC. The timeline was agreed by Plenary and is shown in Appendix 6 of this document.

6.6.4 MEPC70: Outcome

Submission 70/7/6 put the identification of a provisional fair share in April 2018-October 2018 at MEPC72 and 73. The agreed text annexed to the MEPC70 report puts adoption of an initial strategy, which appears to be a list of measures rather than a target or share, in MEPC72 in 2018 but with a decision at MEPC78 in Spring 2022. The two timelines are presented for comparison in Appendix 6. The proposal to define and assign a 'fair share' contribution from shipping to global CO_2 reduction efforts became a *'Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG Emissions from Ships'*. The new timeline placed the adoption of an *'initial IMO Strategy'* which would include, '*inter alia, a list of candidate short-, mid- and long term further measures with possible timelines, to be revised as appropriate as additional information becomes available'* at MEPC72 in Spring 2018. This aligns with the *'Identification of a provisional fair share and discussion of any further work/steps that this implies',* set for MEPC72 in 70/7/6. However, the new timeline also puts a decision step at MEPC78 in Spring 2022 and revision of the strategy, in Spring 2023 at MEPC80.

The essence of Submission 70/7/6 was that discussion should start immediately, carried out independently of the DCS and a 'fair share' may be defined using available data. The WG re-problematized 'fair share' to 'IMO strategy' and their timeline offers a plan to create this strategy. Submission 70/7/6 expressed concern that focusing on the three-step approach alone would not permit the MEPC to reach any outcome before 2021-2023. This appears to be exactly what the newly agreed timeline suggests. When the WG returned to Plenary one CO expressed their discontent with the lack of ambition shown.

Submission 70/7/6, though gaining much support in Plenary and the WG, has been distorted through the process and its problematization diluted. Furthermore, the genesis proposal (submission 68/5/1) from Case Study 1 had requested immediate discussion of a target and measures to achieve it. Two MEPC submissions and one larger, stronger network later, the outcome was the establishment of a WG and a Roadmap to a comprehensive strategy to reduce GHG emissions. The translation of the interests of the

Marshall Islands and its network has therefore not been entirely successful but it has not been entirely unsuccessful either. While no target or MBM has yet been agreed, the submissions have opened this black-boxed discussion and unleashed the controversy (Cloatre & Dingwall 2013; Venturini 2012; Venturini 2009). The case studies show that in the MEPC, translation means compromise, cooperation and even the dilution of the problematization. The insights gained from the Case Studies will be expanded on in the following discussion.

6.7 Discussion

In ANT literature translation and treason have been applied individually and separately. Moreover, they have been applied retrospectively to examine empirical contexts. This chapter combines them, and in doing so, demonstrates this as a viable and valuable addition to the application of ANT, particularly as a framing for untangling and understanding international regulatory discussions. The chapter also demonstrated their suitability for analysis of real-time data. This section summarizes the main findings of this chapter.

6.7.1 Strategic Selection

Translation has been shown in the IMO to be a process of network building, agenda creation, text re-working and mobilization of support. The process of Outreach involves the stages of interessement and enrolment. How actors are chosen to join the network by the problematizer has not been discussed in the literature in great detail. The data from this research shows a strategic and careful selection process is carried out. The aim for the problematizers is to orchestrate specific characteristics into their network to achieve their goal. In the case of the MEPC, they aim for a deliberate balance of similarity and difference. Similarity is sought in the context of national positions, ideas and ideals. Geographical distance and economic difference are desired characteristics to create convincing network variety. The data also further shows that enrolment is not always one directional, with some Delegates offering support upon reading the draft or final submission.

6.7.2 Reaction Categories

The submissions and interventions were analysed and sorted into categories; supporters, modifiers and resisters. The MEPC discussions are extremely complex and last for hours or days at a time (in the case of WG discussions). Interventions can be vague and due to the speech-like style of Plenary and the less structured style of WG discussions, it can be extremely hard to sort through the micro interactions to create a macro account of the networks of support and resistance. Thus, this chapter shows that combining translation and treason allows actors' responses to be organised into a rich account of the complex and controversial negotiations. Furthermore, by doing this, it became apparent how translation is achieved in the MEPC context i.e. it requires multiple attempts across meetings, cooperation, modifications, and ultimately the acceptance of the dilution of proposals as more and more interests are embedded. This will be discussed in detail in the following section.

6.7.3 Understanding Translation and Treason in the IMO MEPC

Successful translation in the IMO results in acceptance of the problematizer's agenda, with the most successful translation being the acceptance of a proposal with little change to the original idea. Translation in the MEPC is a process of cooperation and interest infusion. The first stage of interest infusion is when the co-sponsor network drafts a submission and embeds their interests into the text document. This document is then discussed at the MEPC, with the proposal undergoing further modification in the process of gathering agreement and majority support.

The realization of an agenda can be a long, slow process that involves strategic planning and flexibility. Problematizers must often plan for the long term, across more than one meeting. Contrary to past studies (Callon 1986a; Egan 2014; Jollands et al. 2015) that show that network failure involves the disassociation of the network, this study shows that if a network is unsuccessful at translating their agenda in one MEPC meeting, they are likely to stay together and gather more members for the next meeting. If however, the submission network is successful, they do not become durable. Instead, they become fossilized and the focus becomes enacting the proposal rather than continuing to build network support. Therefore, in this context unsuccessful translation attempts can

therefore be said to lead to a more durable network. Moreover, to Callon a successful translation involves assuming a durable position of power atop a mobilized network (Callon 1986a). This is not possible in the MEPC and will be explained in Section 6.7.4.

Successful treason in the MEPC is the construction of a network of resistance and the rejection of a proposal. In one sense the text submission can be locked out of the discussion through rejection and disruption which aligns with the literary definition of the sociology of treason however in another sense treason is impossible. The text may be rejected but it also becomes historic, archived in the database and therefore is never disrupted into silence (Galis & Lee 2013). Moreover, no Member State can be locked out of the MEPC due to the principles and processes of the Organization. In the case of a rejected proposal, the submitters can draft a new proposal for the next meeting, which was evident in the case studies. Although the Marshall Islands were unable to translate their agenda in MEPC68, they gathered more actors into their submitting network, re-worked the proposal and gained more support with every iteration (i.e. 69/7/2 and 70/7/6). In the MEPC, translation involves multiple attempts, cooperation, infusing interests into proposals to gain support and overall dilution of the problematization. Treason involves attempts to build networks of resistance, distort and reject proposals.

6.7.4 The Practice of Principles

Drawing on the analysis presented in this chapter, full translation and full treason according to the definitions laid down by Callon (1986) and Galis and Lee (2013) in their case studies, cannot occur in the MEPC. In ANT, successful translation means the problematizers have built a mobilized network for the realization of their agenda and in doing this, the problematizers assume a position of power. Equally successful treason means that one group of actors, the re-problematizers, is able to lock another group of actors out of the network, thereby constructing them as weak. In the MEPC however, no Member State can assume a position of durable power over the other Member States or *reject* them from the network.

The IMO, and by extension the MEPC, anchors its processes to its principle of Equality between Member States, and its practice of Consensus. Every Member has the right to

submit proposals, voice their position in the discussions and vote if one is called. Chapter 5 explained that in Plenary, Members sit in alphabetical order and that the Secretariat must assist all of the Member States. Thus the Member States are made equal by the principles, rules and practices of the Organization. The enactment of Equality constrains treason to the *rejection* and *disruption* of ideas and submissions only. This observation was supported in interviews. Participants explained that although some Member States are more active on certain issues and some are more effective problem solvers, no Member has the power over others.

Additionally the principle of Consensus acts on the discussions by bringing all the Delegations together. Consensus is the sense of general agreement necessary for acceptance of a proposal. It is the reason that problematizers continually re-shape and modify proposals seeking agreement. They dilute their agenda with the interests and modifications of others until they achieve Consensus. Consensus also acts on the resisters in the same way, encouraging them to dilute their resistance and come together in agreement in order to make regulatory progress. In the ANT literature, networks have triumphed over other networks (Callon 1986b; Galis & Lee 2013), however in the MEPC process, opposing networks are brought together by Consensus.

6.8 Conclusion

This thesis aims to understand how regulatory control is constructed by building up layers of the account in each data chapter. In the application of ANT, Chapter 5 identified some of the actors, namely *spaces, people* and *things.* This second data chapter has followed the Organization's processes of submission and discussion. Through application of the sociologies of translation and treason, the principle of Equality and practice of Consensus, were identified as significant explanatory data and furthermore, as actors themselves. This section has explained that as an actor, the principle of Equality constrains the formation of powerful positions. Understanding the agency of this principle raised the question of other similar sources of agency in the MEPC that had yet to be fully accounted for. This thesis moves on to account for these 'missing masses' (Latour 1992). Consensus, conflicting regulatory principles and the

Paris Events were identified for following and Chapter 7 assembles them into the explanation of the network and of control making.

7. Assembling the Missing Masses: Meta-Actors in the MEPC

7.1 Introduction

'*The project of ANT is simply to extend the list and modify the shapes and figures of those assembled as participants and to design a way to make them act as a durable whole.*' (Latour 2005, p72)

The quote above encapsulates the work done by this chapter, i.e. it extends the explanation of the MEPC as a whole by identifying further sources of agency that have yet to be accounted for, and follows these agents as they act upon the Committee. The principle of *symmetry* (Callon 1986a) guided the research and the analysis of the data was shaped by the Latourian definition of an actor, i.e. *'any thing that does modify a state of affairs by making a difference is an actor'* (Latour 2005, p71). The attribution of agency is therefore possible when traceable effects are observed. The entities presented in this Chapter, emerged as agential in the MEPC but did not belong in the aforementioned categories being neither *Spaces, People, Things* (Chapter 5) nor *Processes* (Chapter 6). As such, the goal became to assemble these '*missing masses'* into the account of constructing regulation (Latour 1992). Thus, this chapter adds a further layer to the explanation of the MEPC network.

Chapter 3 explained that controversy would be used as a mode of inquiry; a gateway into social construction (Venturini 2009; Venturini 2012). The entities followed here arose through, or caused controversy, in the MEPC, however they lack physicality within the MEPC. They are abstract and are dependent on the heterogeneous collective to enliven them and yet despite this dependence they maintained a level of influence throughout the negotiations. Three entities will be described: (i) Consensus, (ii) Regulatory Principles and (iii) the Paris COP and Agreement. As this chapter will illustrate they constitute a new actor category: the *Meta-actor*. This terminology is offered as a contribution, both to the empirical understanding of the MEPC and for the advancement of ANT understanding of control and influence.

7.2 Consensus

After exploring the actors and processes of the MEPC in Chapters 5 and 6, the researcher was faced with a question: *Why does a network of heterogeneous actors with often opposing positions come to a decision?* At points during the observation, the Delegates themselves noted that they were, '*going in circles*'. If controversy can be understood as, '*a space of conflict and negotiation among actors that would otherwise happily ignore each other'* (Venturini 2009, p261), then what influences the Delegates to move beyond moments of controversy and reach a decision? This question prompted the exploration of how Consensus, as a network convergence, is produced by the actors of the MEPC.

As a term, Consensus simply refers to, 'a general agreement'. Prior studies have black boxed Consensus as feature of international frameworks, explaining its origins (Lockwood Payton 2010) and the advantages and disadvantages of its application (Buzan 1981). However, they do not address its role in the process of constructing regulation. As such, the following section explores, not only the production of Consensus but also its agency in the MEPC network.

7.2.1 Consensus in Documents

This section explains how Consensus was represented in IMO documents and in doing so, it shows that the production and influence of Consensus can be more fully understood in practice.

The visibility and influence of Consensus in IMO documents is contradictory. As the following excerpt illustrates, the rules and standards adopted by the Organization are done so through Consensus:

> '…all Members may participate in meetings of the IMO bodies responsible for drafting and adopting recommendations containing safety and anti-pollution rules and standards. <u>These rules and standards are normally adopted by consensus</u>;'

(Excerpt from LEG/MISC.8: Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization; A Study by the Secretariat (2014) p8, emphasis added)

Furthermore, Consensus is noted to be a driver of the construction of regulation:

> 'Through their input into IMO's consensus-driven regulatory processes, the shipping industry and other maritime stakeholders are an integral part of the solution to reduce administrative burdens and thus achieve better and smarter regulation.'

(Excerpt from 'IMO Public Consultation on Administrative Requirements in Maritime Regulations', emphasis added)[74].

Consensus is a core practice for the adoption of regulations within the IMO (Karim 2015), yet the term is notably absent from four documents that are central to the establishment (IMO Convention), practices (Rules of Procedure and Guidelines on the Organization and Method of Work)[75] and strategic operations of the Organization (the High Level Action Plan).[76] Given the lack of explanation of the term in core texts, it became clear that Consensus could not be understood as a written rule or formal instruction. Rather, it is an abstract concept that requires collective performance to make it visible. Thus, understanding the agency of Consensus would require tracing its enactment and influence in practice.

7.2.2 Consensus in Practice

In an interview with a member of the Secretariat, Consensus was explained:

"…we work in a different way to some of the other UN…we work by what we call consensus. Now, Consensus, here it normally means that majority rules and so if the majority views are something that is acceptable to them, then the thing normally gets progressed. In other UN bodies Consensus means unanimity which means everybody

---

[74] Available at: http://www.imo.org/en/OurWork/rab/Documents/Final%20report%20of%20the%20Ad%20Hoc%20Steering%20Group%20for%20Reducing%20Administrative%20Requirements%20to%20Council.pdf Accessed: 25.05.17

[75] The Rules of Procedure for all part of the Organization are presented in the Basic Document and the Guideline for the Organization and Method of Work are presented in MSC-MEPC.1/Circ.4/Rev.4

[76] The High Level Action Plan (A29/Res.1097) is a document laying out the Organization's strategy and goals

has to agree everything before it's agreed…for example, that's the way it works in UNFCCC, for the climate change agreement, so it depends on the forum you are in but here…as long as sufficient numbers of Parties or Member States make their view known, usually if the majority of those views will be considered as supportive then the amendment will be moved forward." (Participant 24: A member of the Secretariat)

Consensus in the IMO has a different existence to its parent Organization, the UN. Though explained here as, 'majority rules' as opposed to 'unanimity', Consensus was not clearly defined in practice. The following vignette presents observations of the discussions to establish a new WG for Reduction of GHG Emissions from MEPC69, a case where there was a majority agreement among Delegates and yet the decision had to be modified before it was felt that Consensus had been achieved. Consensus can be seen most clearly during times of controversy as it is working to drive the Delegates from opposition to a point of commonality, and thus to a decision.

After listening to all of the interventions on the submissions under agenda item 7, the Chairman attempted to create a summary. Points 1-6 of his summary were all agreed upon, however points 7 and 8 were not. In the MEPC every Member State has one vote and in terms of simple numbers there was a majority of support for including all eight terms. Some Members, however, were in opposition to the inclusion of the last two points and although the resistance was smaller in number, they were vocally strong. In response to this the Chairman offered a compromise. He noted that the support was for both points being taken forward and the resistance was against both points being taken forward. As such, he proposed including just one point: the establishment of a working group at MEPC70 to discuss the matter further. In his own words,

"Those are the two contentious issues. What I am listening to now is…some of you would like both and some of you would like none. So my trade-off is we agree to one of them. In all fairness, I am trying to find a compromise, as we always do here."
(Plenary Chairman, Agenda Item 7: MEPC69)

However, his compromise met resistance and after multiple interventions he said,

"Dear colleagues. I am trying every trick from the bag but it's just not working. I want to keep you united. I don't want to go into numbers, you know that…You know that I want to keep you united so that's why I am trying to find a compromise"
(Plenary Chairman, Agenda Item 7: MEPC69)

He then proposed a slight change in his wording and opened the floor again. After further interventions he made an appeal to the crowd:
"I am really trying that road in the middle to get you to move forward. If you all go quiet and do not raise your cards that means you can agree to that. So I have your agreement? Tell me that I have your agreement. I don't have the agreement, really?"
(Plenary Chairman, Agenda Item 7: MEPC69)

In a following intervention the Delegation of Brazil made the following statement, which they also requested to be attached to the MEPC69 report:
"We feel obliged to remind the Committee, since we are discussing sectorial targets for emission reduction, that at UNFCCC the discussion is based upon the respect to the consensus rule. So we should have at the IMO an inclusive and transparent process, a multilateral approach consistent with the principles and provisions of the UNFCCC. I would like the statement to be reflected in your report."

Another Member Delegation then aligned with this, reminding the Committee that any outcome of the working group would need to be agreed by Consensus.

The resisting Delegations reluctantly agreed to compromise and near the end of the discussion the Chairman re-iterated the Consensus principle, *"It's an in-depth discussion. You threw many things at me. I hope you know that we work on Consensus and that's what I am trying to do here."* (Plenary Chairman, Agenda Item 7: MEPC69). Ironically, Delegates and Chairmen more often invoke Consensus at the times when it is not being reached.

In the end, the Chairman was able to create Consensus by first offering a compromise, then changing the wording of the compromise and finally reasoning with the Delegates and reminding them of the principle of Consensus by which they work. It was not only the Chairman's efforts that created this Consensus; the Member States who supported his initial summary and then agreed to the compromise. Equally the resistance that lessened and then became consent was also part of creating Consensus.

Despite the earlier explanation from the Secretariat defining Consensus as a majority rule, in the case of MEPC69 there was a majority of support for including the last two summary points in the report. However, the Chairman clearly felt he needed a greater level of alignment in the Committee before he could close the issue. Consensus, it seems, is not necessarily a matter of numbers; in practice, more than a majority was needed before the Chairmen felt Consensus had been achieved. Additionally, echoing back to Chapter 5, this vignette also illustrated the role of the Chairman as a Consensus builder.

During the meetings observed, Consensus was invoked multiple times by the Delegates and the Chairman. In these moments, it was positioned not only as an organizational principle but also as a feeling. Delegates spoke about "*the spirit of Consensus*" or a "*feeling of Consensus in the room*". Equally, Consensus was often positioned as an aim for the negotiations and as an achievement if accomplished. Furthermore, not reaching Consensus appeared to be considered as a kind of collective failure. In times when the discussion reached an impasse, Delegates continued negotiating and attempting to reach agreement. As discussed in Section 5.2.2, they would stay late into the night in WGs coming up with new ideas until they managed to achieve a satisfactory level of agreement that they identified as Consensus. In addition, individual Delegations generally experience pressure to try to construct proposing submissions that are more likely to achieve Consensus when faced with negotiation. In interview, one participant from a CO Delegation explained the need to reach Consensus to progress proposals:

'…I've seen plenty of times where submissions or proposals basically get, they get killed because the Committee doesn't come to a Consensus agreement on it and the worst words from a representative's point of view who's trying to accomplish an agenda is…"Ok, come back to a future session with a more concrete proposal"'
(Participant 31: CO Delegate from an Industry Association)

In addition to the feeling of Consensus being an achievement by the Committee, it is also a source of pride for Delegates:

'Well, and I would say if you're familiar with other UN agencies and organisations, the IMO is actually really acclaimed for being one of the most successful UN bodies because of its ability to come to consistent Consensus decisions very quickly actually, and I know when you're there, if it's new, it seems very tedious when you consider that from a new proposal to an actual adoption of an amendment and then the entry into force…you're looking at 8 to 10 years or longer. But comparing that to how the UNFCCC makes incremental decisions where they don't take one decision, they just take these tiny little steps towards a decision with every meeting…' (Participant 31: CO Delegate from an Industry Association)

In the discussions, Consensus became a shaping influence and a driving force. With the heterogeneous assemblage aiming at the production of this ethereal entity, it can be seen to influence their work, from submissions through discussions to the decisions themselves. The level of influence that is given to Consensus is due to the characteristics of the shipping industry and the Flag Registry System (see Section 2.6). In the words of the IMO:

'IMO usually tries to act on a consensus basis. This is because it is important that measures adopted by the Organization, which can have a major impact on shipping, achieve as much support as possible. A treaty that was supported by only 51 per cent of the IMO membership, for example, would be opposed by nearly half the shipping world. Not only would they not ratify the treaty concerned but they might go off and adopt an alternative treaty of their own, thereby dividing the maritime community.' (Excerpt from the IMO Webpages[77])

From this, it is clear that Consensus is a key requirement for regulations to be accepted and effective. The influence of Consensus on the MEPC is also strengthened by the desire of the Delegates and Chairmen to avoid formal votes. The next section will

[77] Frequently Asked Questions under the drop down question: 'Doesn't IMO always aim for the lowest common denominator?' Available at: http://www.imo.org/en/About/Pages/FAQs.aspx Accessed on 01.05.18

discuss the link between the avoidance of formal voting and the practice of building Consensus.

7.2.3 Consensus as a Mechanism to Avoid Votes

In an analysis of the origins and history of Consensus across International Organisations state-actors were found to *'bargain in the shadow of the vote*' (Lockwood Payton 2010, p5). This was confirmed during observation of the MEPC meetings. The Delegates resist opting for formal votes and indeed general quantification of the discussions as much as possible. In the vignette above the Chairman of Plenary himself stated that he did not want to "*go into numbers*".

Decisions in the IMO are rarely taken by voting. During interviews this was often stated and indeed, the respondents gave the impression that voting was taken only as a last resort: *"they are very very rare and I stress it's something we try and avoid because that indicates that there isn't a degree of Consensus going forward."* (Participant 24: A member of the IMO Secretariat).

In an interview a Delegate explained the hesitancy to vote as linked to the applicability of the regulations in the industry itself:

'But that process [voting] is actually really quite rare because as a general principle, IMO does prefer to…to take decisions based on Consensus, and that's because the rules and regulations that are developed over at the IMO are of course applicable for these international treaties and Shipping is unique in this sense because, with Shipping having an international regulatory structure its absolutely paramount in order to enable efficient implementation of the requirements because ships are going from port to port and country to country, so having a Consensus based rule certainly favours the maritime industry in general.' (Participant 31: CO Delegate from an Industry Association)

Some respondents noted that the impact of the last vote taken at MEPC62 in 2011 for the adoption of the EEDI and SEEMP could still be felt five years later. The vote was requested by Delegation of Saudi Arabia (IMO 2018b). There were 59 of the 64 Parities

to MARPOL Annex VI present and eligible to vote. 49 Parties voted for and 5 Parties voted against the adoption of the Energy Efficiency Measures (2 Parties abstained). The Parties that voted against the adoption were Brazil, Chile, China, Kuwait and Saudi Arabia (ibid). One respondent claimed the vote had left a *'bad taste'* in people's mouth. Equally at one point in the MEPC68 discussion, a Member State Delegation spoke about how the *'house'* [MEPC] had reached a degree of harmony in the last few years. In saying this he seemed to be alluding to the time period after the vote when there had been division and feelings of disharmony among the Committee. This again illustrates that even though the IMO technically works on a majority basis, Consensus represents a feeling of unity that has more value in the practice of developing regulation than formal quantification approaches do.

The desire to avoid voting, despite voting being part of the written Rules of Procedure, fuels the influence of Consensus. In avoiding the use of voting on decisions, the Committee are instead coordinated and driven by the principle of Consensus. In their collective enactment of Consensus, they make it a durable actor across meetings. Yet Consensus is also vulnerable as it must be constructed and performed at each meeting by the assemblage.

7.2.4 Consensus as a Meta-actor

The MEPC is an assemblage that relies on heterogeneity and cooperation to do its work (Star & Griesemer 1989), and Consensus is the actor that encourages (even persuades) the diverse network to cooperate. In contrast to Star and Griesemer's examination of scientific communities where *'Consensus is not necessary for cooperation nor for the successful conduct of work.'* (Star & Griesemer 1989, p388), observations of the MEPC, as a politico-technical community, suggest that Consensus is not only necessary for the successful conduct of the work; it is an actor that is part of the MEPC assemblage.

Latour asks Actor-Network theorists to consider the difference an actor makes to a situation (Latour 1992; Latour 2005). Consensus pervades the process with its directive influence. Remove Consensus as a principle and the MEPC would become a group of heterogeneous actors caught in a discursive loop with no concessions, compromise or

progress. In times of controversy, Consensus manifests and moves the Delegates on to a point of convergence.

Though it is often presented as a simple term, Consensus was far more complex when its influence was traced through the process. Consensus has no material qualities; its written form is simply a black-boxed terminology while its practised form is quite different. Though sometimes explained as a majority rule in the negotiations, in practice it was a term that the Committee filled with their own meaning. In its enrolment, it infused the discussion and acted on the work of creating regulation, yet it was not made visible until invoked.

Consensus is both the creator of, and created by the work. It has no physicality and acts through others yet it cannot be created or controlled by any single actor. Instead, it is a construction of the assemblage. The Delegates not only aim to achieve it, during their discussions, they enact it, enlivening it as an actor itself. They are continually sustaining it, allowing it to achieve a durable level of influence upon the process of creating regulation. Though abstract and dependent on the collective for its existence, it drives their negotiations, directing them to converge and thus acting upon all negotiations and decisions in the MEPC. Thus, as an actor, it highlights a link between influence and vulnerability.

As ANT works show, actors are never working in isolation. Consensus works on the MEPC assisted by the 'shadow' of voting procedures (Lockwood Payton 2010), however it is also supported and strengthened by the regulatory principle of Non-Discrimination which is held by the Organization and embedded into its work. This Principle and its opposing, international counterpart: Common But Differentiated Responsibilities are the focus of the next section.

7.3 Regulatory Principles

This section follows the influence of two conflicting principles in the MEPC. The first principle, Non-Discrimination sometimes referred to as 'equal treatment for ships'. is one held by the Organization. The second principle, Common But Differentiated

Responsibilities (CBDR), is external to the IMO and is embedded in the Kyoto Protocol. These two principles, when enrolled, created a disharmony during discussions and often stalled the negotiations, particularly during the working group at MEPC70.

The non-discriminatory principle is held by the IMO due to the regulatory framework of the international shipping industry. As outlined in Chapter 2, the Flag Registry System and possible use of Flags of Convenience means that IMO aims to ensure all Members agree to adopt and enforce regulations. Furthermore, it is important that is no favourable treatment for Members because this would result in the vessels being flagged in the Registries with the least stringent regulatory requirements. CBDR was laid out in the UNFCCC:

> The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

(Article 3, Principle 1: UNFCCC 1992)

CBDR and Non-Discrimination are essentially in opposition. CBDR advocates for differentiated regulations and targets for different states of development, while Non-discrimination aims for regulation, which is equally applicable across all flag states to avoid evasion through flag switching.

CBDR is an important feature in international climate change governance and although external to the MEPC it was invoked often during the discussions observed, particularly in conjunction with discussions of emissions targets, caps or IMO Determined Contributions. In MEPC70, CBDR was displaced from its external context and drawn into the MEPC discussions where it was enrolled by *resisters* in a submission and during both Plenary and WG discussions.

The enactment of CBDR in MEPC70 created a discursive tension during the negotiations and the disharmony between the principles of CBDR and Non-Discrimination affected the progress of the meeting. The exploration of the enactment of CBDR in MEPC70 highlights how it acts to slow discussions. This enactment of CBDR is then examined on a longer timescale to more fully demonstrate its agency.

7.3.1 CBDR in MEPC70

This section focuses on CBDR as an external principle drawn into the MEPC, which creates a controversy with the internal principle of non-discrimination. The enactment of CBDR is traced through a submission and into the Plenary and WG discussions to show the agency that regulatory principles can have in the process.

Submission 70/7/4: '*Proposal on how to progress on the contribution of international shipping to GHG emissions reduction efforts'* was co-sponsored by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay. In the submission, the co-sponsors argued that an overall cap for emissions would be *'fundamentally unfit'* for the shipping industry and suggested that the Committee should focus on enhancing energy efficiency and uptake of alternative fuels in the industry. Echoing the analysis of Chapter 6, the network of co-sponsors for 70/7/4 are understood as the network of opposition to proposals of '*determined contributions*' '*fair shares*' and '*targets*'. In their submission, they displace CBDR from the UNFCCC and draw it into the IMO MEPC negotiations:

> 'There is a clear imperative for IMO's Member States to rise to the challenge set by the Paris Agreement for the international community and continue to make contributions to this global effort, taking into account the principles and provisions of the United Nations Framework Convention on Climate Change (UNFCCC) and recent developments of the Convention in order to avoid contradictions in the intergovernmental sphere.'

(Excerpt from MEPC70/7/4, Submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay, p2)

Here the co-sponsors are deliberately creating dependence between progress in the MEPC in the wake of the Paris Agreement, with the need to incorporate provisions from the UNFCCC. The co-sponsors then go on to state:

> 'The mandate of IMO for addressing marine bunker fuel emission arises from the Kyoto Protocol of UNFCCC3. IMO Assembly resolution A.963(23) urged MEPC to identify and develop the mechanisms needed to achieve limitation or reduction in GHG emissions from international shipping, in cooperation with UNFCCC. Furthermore, resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships* recognizes the principles enshrined in the UNFCCC and its Kyoto Protocol, including the principle of "common but differentiated responsibilities (CBDR) and respective capabilities".'

(Excerpt from MEPC70/7/4, Submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay, p5)

Here, the co-sponsors are constructing an argument that, not only should the CBDR principle be considered when creating regulations in the MEPC and harmonized with the Non-Discrimination, but that there is evidence of CBDR being accepted already within the IMO and MEPC texts (A.963(23) and MEPC.229(65) respectively). By doing this they are attempting to associate the principle of CBDR with established IMO and MEPC text and to re-problematize the guiding principles of regulatory work in order to translate their own agenda:

> It is the view of co-sponsors that IMO should make explicit reference to CBDR when addressing these matters as it forms part and package of delegated mandate to it arising from the Kyoto Protocol of UNFCCC and recognize the role IMO can play to level the playing field between the developing countries and developed countries.

(Excerpt from MEPC70/7/4, Submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay, p5)

In effect, this network echo opposing interventions made at MEPC69 and even MEPC68 that suggested the problem of contradictory principles would need to be resolved and that CBDR should incorporated into the MEPC deliberations before they

could open discussions on or agree to a target or emissions cap. Of the fourteen submissions to MEPC70 under Agenda Item 7, seven submissions contained proposals on how to progress the issue of reduction of GHG emissions from ships (see Section 6.6.1). The submission above (70/7/4) was the only proposal that stated the need for CBDR to be incorporated into the discussions; indeed, it was the only submission to mention the CBDR principle at all.

At MEPC70, the objective of the Plenary session on Agenda Item 7 was to gather the Member States positions in response to the submitted proposals and the commonality of views and incorporate these into Terms of Reference for the WG. During this time, the issue of incorporating the CBDR principle was raised, echoing the submission. In response to this, one Delegation voiced their concern about the renewed discussion of CBDR. This Delegate went on to invoke the principle of Non-Discrimination, reminding the group that this principle was part of a set of guidelines adopted in MEPC57 to direct the regulatory process and suggest that the issue of principles should not be reopened.

The WG discussion echoed this pattern from Plenary. The WG was drafting a Roadmap to guide future discussions on GHG emissions. During the drafting, the network opposing a *target, share,* or *contribution* invoked CBDR. A circular discussion ensued wherein the network of opposition felt that CBDR should be included in the creation of new regulations for the reduction of GHG emissions while the other Member States voiced their concern and indeed, *"discomfort"* in opening this discussion. These Members argued that the mandate was to construct a Roadmap and that discussing CBDR was outwith that remit. The interventions on this went back and forth until the Chairman called for a coffee break. After the break, the group agreed to move on with the Roadmap that a discussion of CBDR should not take place presently but may be returned to in future. However, with such a limited time for the WG to produce an

output, the deadlock on CBDR had taken up valuable time[78] and is partly why the WG discussions ended after midnight on the second day.

CBDR, in MEPC70, was a concept that when enrolled acted to stall the discussions. Furthermore, as the question of how to embed CBDR in MEPC regulations remains unresolved, yet key to some Delegations, the issue is likely to continue to arise during discussion, slowing progress with the difficulty of harmonizing two near-contradictory values. In MEPC70, the discussion concerned whether or not it was appropriate to discuss CBDR. As a result, it was not entirely clear what an actual discussion of the principle would look like and so the choice was made by the researcher to follow CBDR in historical discussions to get a better sensitization of its influence.

7.3.2 The Historical Influence of CBDR in the MEPC

During the observation of the discussions, some interventions gave the researcher the impression that this discussion of CBDR had been addressed many times before and so this section uses documents to flesh out the account of the influence of CBDR over time. Data from MEPC70 showed that CBDR slowed the progress of negotiations. This section illustrates that CBDR has been able to do this across months and years in the MEPC.

One of the key aspects of the principle of CBDR is its fundamental disharmony with the principle of Non-Discrimination held by the IMO. The principle of Non-Discrimination is enshrined in the IMO Convention:

[78] It is not possible for the researcher to quantify the exact amount of time the principle of CBDR was argued for because taking live notes of the discussion meant she chose to focus on content of the interventions and only record the start and end times of the discussion sessions overall.

> To encourage the removal of discriminatory action and unnecessary restrictions by Governments affecting shipping engaged in international trade so as to promote the availability of shipping services to the commerce of the world without discrimination; assistance and encouragement given by a Government for the development of its national shipping and for purposes of security does not in itself constitute discrimination, provided that such assistance and encouragement is not based on measures designed to restrict the freedom of shipping of all flags to take part in international trade;

(Convention on the International Maritime Organization, Part 1, Article 1(b) in IMO Basic Documents Volume 1 (2010), p9)

In a report of its work to address GHG emissions from Shipping the IMO present this principle as necessary due to the characteristics of Shipping:

> The global character of shipping has resulted in the adoption of global regulation that applies universally to all ships irrespective of the country of ship registration, in line with the basic principle of non-discrimination set out in IMO's constitutive Convention.

(Excerpt from Submission by the IMO to the 37th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 37) (2012), p2)[79]

The rationale underlying Non-Discrimination is to ensure that regulations are consistent across flags in order to limit regulatory avoidance or evasion though flag switching which was made apparent when it was adopted at MEPC57:

[79] Available at:
http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/COP%2018/IMO%20Info%20Note%20to%20SBSTA%2037final.pdf

MEPC 57 (April 2008) acknowledged the importance of developing fundamental principles as a basis for future regulations and decided, by overwhelming majority, to take the below listed principles as its reference for further debate on GHG emissions from international shipping. A coherent and comprehensive future IMO framework should be:

.1 effective in contributing to the reduction of total global greenhouse gas emissions;
.2 binding and equally applicable to all flag States in order to avoid evasion;[80]

(Excerpt from Submission by the IMO to the United Nations Climate Change Conference, 8th Session of the Ad Hoc Working Group on Long-Term Cooperative Action (AGW-LCA8) at COP15 (2009), entitled: Control of Greenhouse Gas Emissions from Ships Engaged in International Trade, p16)[81]

During an interview, one of the Delegates who was part of an Industry Association in the MEPC and an employee of a large shipping company explained how easy it can be to switch flags:

"*...but certain flags in particular within the open registries, you can basically change the flag overnight, they do the whole thing on the internet and you can have all the new certificates printed the next day, so for some flags it's a very, very easy process, some even say it is probably too easy...*" (Participant 6: A CO Delegate from Industry Association Delegate and member of a shipping company)

Indeed, in a publication entitled, 'Tackling Ship GHG Emissions at IMO' by the CSC[82] state that the principle of *'equal treatment of ships'* held by the IMO is *'essential for a global industry where ships can change their nationality overnight'* (Seas at Risk & Transport & Environment, n.d.).

[80] There were seven additional principles, nine in total that can be seen in the document itself.

[81] Available at https://unfccc.int/files/methods/emissions_from_intl_transport/application/pdf/imo_awg-lca_8_submission.pdf Accessed: 17.04.18

[82] The authoring Organisation, which has observer status in the IMO as an NGO Delegation

Flag switching can be seen, therefore, as a form of regulatory avoidance. In interviews, industry members explained that due to this possibility, it is imperative for the industry that the regulatory 'playing field' should be as even as possible. The problem of CBDR in the MEPC can be traced historically through discussions. In a submission from the IMO to COP15 in 2009, the issue is summarized:

> 28 A number of delegations have maintained the view that any GHG reduction measures to be adopted by IMO should only be applicable to ships flying the flag of Annex I parties to the UNFCCC in accordance with the principle of 'common but differentiated responsibility'. This principle was adopted by the UNFCCC and should be upheld in all international negotiations regarding climate change. In view of the different contributions to global environmental degradation, States should have common but differentiated responsibilities based on the Rio Declaration from 1992. These delegations have been unable to agree to mandatory emission reductions measures applicable to all ships and reasoned that developing countries (non-Annex I countries) cannot take on emission reduction commitments related to international shipping and that such measures on the part of ships registered in developing countries should only be on a voluntary basis.
>
> 29 Other delegations have expressed the opinion that, given the global mandate of IMO, as regards safety of ships and the protection of the marine and atmospheric environment from all sources of ship pollution, the IMO regulatory framework on GHG emissions should be applicable to all ships, irrespective of the flags they fly. It has been stressed that, as three-quarters of the world's merchant fleet fly the flag of developing countries not listed in Annex I to the UNFCCC, any regulatory regime on the reduction of GHG from shipping would become ineffective for the purpose of combating climate change, if applicable only to ships flagged in Annex I countries. IMO has its global mandate from the IMO Convention itself as well as from UNCLOS, and not from Article 2.2 of the Kyoto Protocol and that there is no precedence in any of the more than fifty IMO treaty instruments currently in existence where measures are applied selectively to ships according to their flag. On the other hand, there are several international environmental agreements which have a differentiated approach, such as the Montreal Protocol (on substances that deplete the ozone layer), yet when IMO has dealt with the same issues, the principle of differentiated approach (according to flag) has not been taken on board.

(Excerpt from Submission by the IMO to the United Nations Climate Change Conference, 8th Session of the Ad Hoc Working Group on Long-Term Cooperative Action (AGW-LCA8) at COP15 (2009), entitled: Control of Greenhouse Gas Emissions from Ships Engaged in International Trade, p17)

This excerpt is a key indication of the state of discussions. Although from 2009, the content is applicable to the contemporary discussion at MEPC70. Furthermore, it perfectly captures the incommensurability of the essence of the principles. If the MEPC were to incorporate CBDR into development of MBMs then it would be in conflict with the principle of Non-Discrimination and allow certain flags more lenient regulations. The excerpt states that the majority of ships are flagged with developing countries and this remains true. Granting leniency to those flags based on historical emissions and developmental state would most likely result in flag switching and regulatory avoidance, not to mention a patchwork of control over emissions.

Attempts to enrol CBDR in the MEPC negotiations allow the principle to act upon the discussions. Historically, a lack of progress on MBMs has been attributed to it. A summary of the discussions held at MEPC59 states:

> Furthermore, the Committee overwhelmingly agreed that "a market-based measure was needed as part of a comprehensive package of measures for the regulation of GHG emissions from international shipping". With this in mind, the Committee "considered and agreed to a work plan for further consideration of market-based measures", culminating in 2011, to complement the technical and operational reduction measures and to provide economic incentives for the shipping industry.

(Excerpt from Submission by the IMO to the United Nations Climate Change Conference, 8th Session of the Ad Hoc Working Group on Long-Term Cooperative Action (AGW-LCA8) at COP15 (2009), entitled: Control of Greenhouse Gas Emissions from Ships Engaged in International Trade, p4)

This same point is reiterated later in the document, this time with the wording *'overwhelming majority'* (p21). By the definition of Consensus given in Section 7.2.2, this should represent a Consensus on the need to develop MBMs for Shipping. However, at time of writing (2018), there are still no MBMs in the shipping industry. The IMO provides a short historical explanation of this:

MEPC 60 called for an expert group to undertake a feasibility study and impact assessment on MBMs that had previously been proposed by governments and observer organizations. The results of the expert group were presented at MEPC 61 where an extensive debate was held on how to progress the development of suitable MBMs. The Committee agreed to hold an Intersessional Meeting of the Working Group on GHG Emissions from Ships (GHG-WG 3) that was held in March/April 2011 and its report was submitted to MEPC62. However, due to time constraints and the busy agenda of MEPC62, it was agreed to postpone the consideration of MBMs to the next MEPC session (MEPC 63 in February/March 2012).

MEPC 63 continued its consideration of proposed MBMs, and agreed on the need to undertake an impact assessment of the MBM proposals with focus on possible impacts on consumers and industries in developing countries, in general, and in particular, least developed countries, small islands developing States and remotely located developing countries with long trading distances, and considered in detail the methodology and criteria it should be based on.

MEPC 65, in noting several submissions on this matter, agreed to suspend discussions on MBMs and related issues to a future session.

(Excerpt from IMO Webpage: Market Based Measures (IMO 2018g))

Clearly, the MEPC has been wrestling with the question of MBMs for years. Its failure to progress this issue is attributed by some to the influence of CBDR:

'Progress at IMO on appropriate ship GHG emission reduction measures has also been held up by the wider climate negotiations. Disagreements over who should make cuts in emissions in the future has spilled over into the IMO in the form of a dispute over the relative importance of the IMO's principle of "equal treatment of ships" and the UNFCCC's principle of "common but differentiated responsibility" (CBDR).' (Seas at Risk & Transport & Environment n.d.)

More specifically, discussions on the MEPC Resolution on the Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy, which was finalized at MEPC65 were seen to be holding up discussions of MBMs:

'Today the member states of the International Maritime Organisation (IMO) agreed on a Resolution on technology cooperation, which was delaying the implementation of standards to improve the energy efficiency of new ships. This resolution had been in discussion for two years and was hindering any progress on other measures to reduce greenhouse gas emissions from ships.' (Kedzierski 2013)

These discussions also included a debate on how to align the Non-Discriminatory principle with CBDR. This issue was resolved at MEPC65 with the phrase: *' "being cognizant of principles enshrined in" the IMO and the UNFCCC conventions.'* (IMERS 2016)

It is therefore clear that historically CBDR has acted for many years to stall negotiations, evident from the accounts above. During the observations of MEPC68,69, and 70, it was clear that the MEPC are once again on the cusp of discussing MBMs for Shipping and again the issue of CBDR was raised during MEPC69 and more actively during MEPC70, both in Plenary and the WG. The discussion of CBDR did indeed seem to stall progress. In the words of one Delegate interviewed after the observation of the WG:

*'Well, um…I will be very frank with you. I think it's [CBDR] much used as way to delay decisions which these countries don't want to see….I can't tell you yet but I suspect it's a matter of principle for these Delegations but it's also a way to block or delay decisions which they don't want, to be very blunt [*laughs].'* (Participant 29: Member State Delegate)

Another Delegate, this time from an industry association, felt that invocation of CBDR and principles in general, raises the status of discussions from political to '*ideological*', '*…and it winds up taking a lot of time and very little progress is made as a result*' (Participant 31: CO Delegate from an Industry Association)

The following section will summarise the attribution of agency to both the principles of CBDR and Non-Discrimination in the case of the construction of regulation.

7.3.3. Regulatory Principles as Meta-actors

CBDR has been identified in this section as a Meta-actor in the MEPC due the way in which its agency is evidenced. The principle itself has no materiality in the MEPC, it is not enshrined in the governing text of the IMO i.e. the Convention on the IMO or the Rules of Procedures. Of course, as noted earlier, Consensus was not a visible part of these texts either but where Consensus is continually and collectively embraced as a core value of the Organization, CBDR is not.

Despite its lack of physicality, the concept is brought into the network and acts upon the discussions through the Delegates and the submissions that enrol it. Its disruptive influence can send negotiations in impossible ideological circles, stalling the process and using up valuable discussion time. The decisions and documents that govern the entire international shipping industry must be made in a matter of days at an MEPC and time lost to irresolvable issues delays the development of regulations. CBDR has been identified in many accounts as responsible for the lack of development on the necessary MBMs for emission reduction. It is a *open controversy* that resists black boxing and is likely to remain an impossible issue in future negotiations (Venturini 2009).

The principle of Non-Discrimination is equally identifiable as a Meta-actor. It is made visible through the IMO Convention text. During the practice of negotiations it is either black-boxed into invisibility in the process (Cloatre & Dingwall 2013), or it is made visible and enacted as a response to the controversy of the CBDR enactments. Its role is also to connect with and strengthen the practice of Consensus. It shapes the development of the regulations themselves, directing the Committee to create universally applicable regulations.

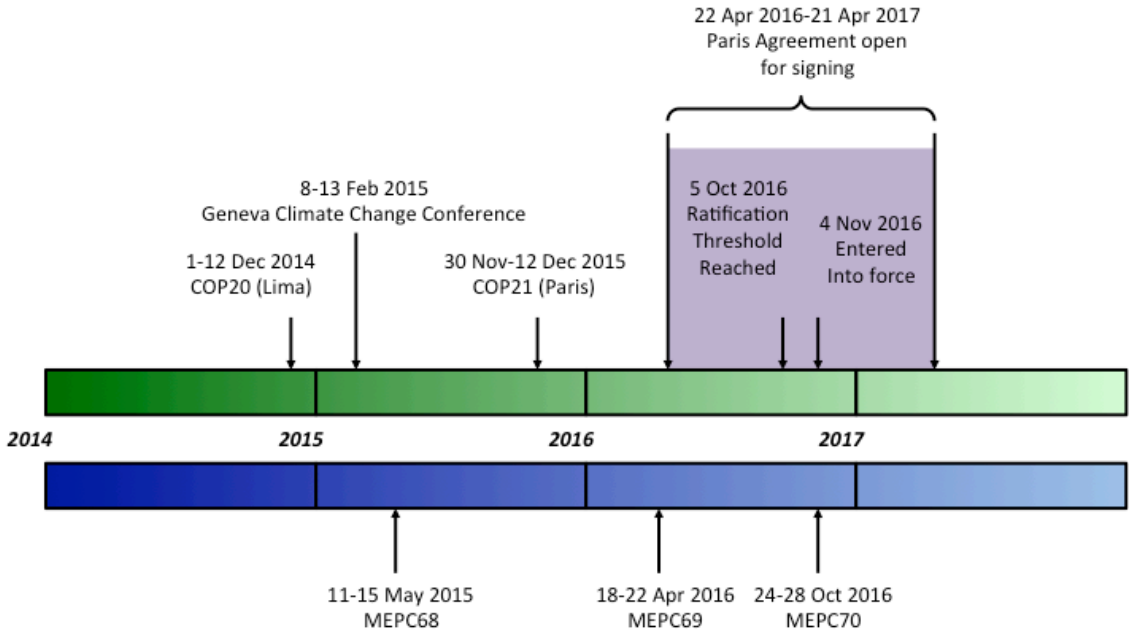
The following section will discuss a third and final *Meta-actor:* the combination of the Paris COP21 and the Paris Agreement. Like CBDR, the Paris events are external yet were drawn in to the MEPC negotiations where they acted upon the assemblage.

7.4 The Paris COP21 and the Paris Agreement

This section introduces the third and final *Meta-actor,* namely the COP21 meeting and the Paris Agreement in the development of new CO_2 regulations. This particular entity (hereafter Paris) exists externally to the MEPC but during observation actors in the MEPC enrolled Paris in various ways and in turn Paris acted upon the discussions. This section follows the enrolment of Paris in the submissions to MEPC68, 69 and 70 and explains its influence over the negotiations in the respective plenary sessions. Following this, the observations of its influence are supplemented with a discussion of the interview data.

In order to contextualize the agency of Paris in the MEPC meetings the timeline of the Paris Agreement must be detailed. The Paris Agreement text was in negotiation at COP20 in Lima, Peru in December 2014 and the Geneva Climate Change Conference in February 2015 (MEPC68/5). MEPC68 occurred in May 2015 meaning that the Paris Agreement was still in a stage of discussion and negotiation at that time. COP21 then occurred from 30th November 2015 to 12th December 2015. Once accepted at COP21, the Paris Agreement then was open for signing from 22nd April 2016 to 21st April 2017. MEPC69 occurred in April 2016. This means that MEPC69 occurred in the wake of the COP21 during which the Agreement was accepted. On 5th of October 2016, the threshold for entry into force was crossed and the Paris Agreement entered into force on 4th of November 2016 (UNFCCC 2017). MEPC70 in October 2016 just as the Paris Agreement was reaching the required signatories for entry into force. Figure 7.1 shows the timeline of the Paris COP and Agreement and the MEPC meetings. Understanding the different stages of the Paris Agreement during the three MEPC meeting is vital as the way it acted on the discussions changed in accordance with the development of the text and the network of actors which mobilized it.

Figure 7.1: Timeline of the Paris Agreement and MEPC Meetings



7.4.1 Paris in the MEPC68 Submissions

During MEPC68 the Paris text was still under discussion, however, it was drawn into discussions in three ways. Firstly, the Secretariat submitted a report entitled, *'Outcomes of the United Nations Climate Change Conferences held in Lima in December 2014 and in Geneva in February 2015'* (MEPC 68/5). At this time, it seemed possible that the shipping industry may be included in the text of the Paris Agreement, which was in development under the framework of the UNFCCC. Although the IMO itself is a UN specialized agency, there was speculation in the IMO that they may lose some autonomy to create regulations under the Paris Agreement. In their MEPC68 submission, the Secretariat, taking up the role of conduit between UN networks, reported elements of the negotiating text which were relevant to the IMO:

> "23*bis*. [In meeting the 2°C objective, Parties agree on the need for global sectoral emission reduction targets for international aviation and maritime transport and on the need for all Parties to work through the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to develop global policy frameworks to achieve these targets]."

(Excerpt from MEPC68/5, submitted by the Secretariat, p3)

> b. Encourage the International Civil Aviation Organization and the International Maritime Organization to develop a levy scheme to provide financial support for the Adaptation Fund.
> c. In establishing the levy scheme, ICAO and IMO are encouraged to take into consideration the needs of developing countries, particularly the LDCs, SIDS and countries in Africa heavily reliant on tourism and international transport of traded goods.

(Excerpt from MEPC68/5, submitted by the Secretariat p4)

Here, the Secretariat brought to the Committee's attention, discussions and drafted text which might alter the course of the MEPC's own work, and indeed, its level of authority as the regulator of Shipping. Thus, the MEPC68 negotiations were taking place in the shadow of the decisions to be made in Paris.

As discussed in Chapter 6, Submission 68/5/1, by the Marshall Islands, used the Paris Agreement as part of a persuasive submission aimed at *interesseing* the other Delegations to align with their suggestion of assigning a reduction target for shipping and agreeing to take suitable measures to achieve this target (Callon & Law 1982; Callon 1986a). The negotiating text for Paris was framed as part of a rationale for accepting the proposal contained in the submission:

> Nations are being asked to make ambitious carbon dioxide reduction commitments in the months leading up to COP 21 in Paris, as is required by the seriousness of the challenge. The Pacific Island nations are joining this call. The international shipping sector must be included in this process because the task requires that a global agreement include quantifiable economy-wide mitigation targets covering all sectors and all greenhouse gases.

(Excerpt from MEPC68/5/1, submitted by the Marshall Islands, p2)

The Marshall Islands attempted to mobilize Paris in order to make their proposal stronger and more likely to *translate* through the discussions towards acceptance. However, though Paris was invoked, it did not act upon the Committee until the MEPC

discussion and indeed it had quite the opposite effect to what the Marshall Islands had hoped for. The next section will follow the effect of Paris upon the MEPC during its 68th session.

7.4.2 Paris Acting in the MEPC68 Discussion

During the Plenary discussion, there were 53 interventions[83]. 28 Member States expressed support for the Marshall Islands proposal and 21 Member States either expressed no support or opposed the proposal outright. In summary, a minimum of 4 Member States and maximum of 11 attempted to enact COP21 as a reason to support the proposal and a minimum of 8 Member States and maximum of 12 enacted the COP21 to stall further discussion on the proposal. These Delegations argued that it would be best to *'wait'* for the outcome of the COP21, that the proposal may be '*premature'* and that '*now was not the appropriate time'* to open such a discussion. The maximum and minimum are given due to the complexity of mapping positions through interventions. Interventions can be vague and often contain multiple lines of argument. As the discussion progressed, delegations often made interventions naming only the other delegations with whom they aligned. As such it was challenging to discern exactly what they align with from the previous delegations intervention, however by untangling the discussion, it is clear to see that Delegations attempted to enrol Paris in two ways.

As shown in Chapter 6, Section 6.4.1, submission 68/5/1 was not translated into agreement successfully, despite gaining some support, the contents of the submission were eventually rejected. From the numbers above, the maximum number of Member State Delegations attempting to mobilize Paris in support or opposition to the proposal in 68/5/1 was very similar. COP21 was an event external to the MEPC and yet it was drawn in, conceptualized and enrolled by the Delegates. The Marshall Islands and their supporters attempted to mobilize Paris to persuade the Committee to accept and take action on the content of Submission 68/5/1. At the same time other Delegations, particularly the network of resisters enrolled Paris as a reason to postpone such action. This enrolment was successful meaning that despite the external COP21 representing a

[83] 52 interventions were from Member States and one from an environmental CO.

global awareness of the need for action to reduce emissions, when Paris crossed the boundary into the MEPC it was mobilized as a reason not to act. Thus, it acted upon the negotiation and contributed to the rejection of MEPC68/5/1. The next section examines how the Paris Agreement, created at COP21 became an actor in MEPC69.

7.4.3 The Paris Agreement in MEPC69 Submissions

Paris was drawn into the discussion in MEPC69/7 through the report of outcomes by the Secretariat that directed readers to the official Paris text. The shipping industry was not included in the Paris Agreement, which, in the end, focused only on national efforts for the control and reduction of CO_2 and called for a limit of temperature rise to below two degrees (UNCC 2018). Despite this, Paris continued to act, both before and during the meeting. The first submission to MEPC69 was made in 12th February 2016 by ICS, known as *'the voice of the industry'* by some participants. In their submission, they stated:

> 1 ICS asserts that the message from the UNFCCC Conference (COP 21) and the Paris Agreement is clear. All sectors of the global economy are now expected to determine how they can reach peak CO2 emissions as soon as possible before eventually decarbonizing completely. ICS agrees that international shipping must play its full part in contributing to this objective.
>
> 2 Now that work on the global CO2 data collection system is almost complete, and in expectation of its mandatory application by 2018, ICS supports in principle the request by the Marshall Islands at MEPC 68 (MEPC 68/5/1), supported by other IMO Member States that the Committee should discuss the establishment of IMO commitments for CO2 emission reduction on behalf of the entire international shipping sector. This would be consistent with the UNFCCC Paris Agreement and commitments made by nations to produce Intended Nationally Determined Contributions (INDCs) and to update these on a five year basis.

(Excerpt from MEPC69/7/1, submitted by the International Chamber of Shipping, p1)

It is clear that the Paris Agreement, despite not including the IMO and the Shipping industry[84] acted on this Delegation and catalyzed a response. From conversations during the observation two things were made clear to the researcher. Firstly, the industry Delegations were previously considered by environmentalists to be stalling progress in the field of environmental regulation, or at the very least, they were not as proactive as necessary. Secondly, this submission was thought to represent a turning point for the industry members and particularly for the Delegation responsible for its submission. Indeed, this submission created quite a buzz among Delegates at MECP69, with a few stating that it was quite surprising[85].

The next submission, 69/7/2, also invoked the Paris stating:

> In the view of the co-sponsors, now is the right time to go about defining the maritime sector's fair share in the "global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty" (UNFCCC Paris Agreement, Article 2.1). We feel encouraged by the last Conference of the Parties of the Framework Convention on Climate Change (UNFCCC), the spirit of cooperation shown in Paris, the commitment of 196 Parties to the UNFCCC to mitigate climate change and the text adopted. The co-sponsors therefore invite the Committee to initiate the relevant proceeding to define the fair share of the international maritime sector in the global reduction efforts of the international community to keep the increase in global average temperature well below 2°C above pre-industrial levels.

(Excerpt from MEPC69/7/2, submitted by Belgium, France, Germany, the Marshall Islands, Morocco and Solomon Islands, p2)

Here again Paris was enrolled in order to strengthen the construction of the co-sponsors argument. Echoing Chapter 6, the submission represents a network growth for the Marshall Islands (see Figure 6.1). During the fieldwork, it was apparent that Member States hosting a COP would strive to make themselves more visible in the meetings and to contribute more. The French Delegation was very vocal in the discussions of MEPC69 and 70 and frequently reminded the Delegates of the Paris Agreement. They

[84] ICAO and the airline industry were also not specifically included in the Paris Agreement.

[85] These comments were made to the researcher in casual conversations during the MEPC69.

also co-sponsored submission 69/7/2, 70/7/6 and 70/7/13. The Delegation of Morocco did not make an intervention on the proposal of the Marshall Islands at MEPC68 however by MEPC69 they were a co-sponsor on 69/7/2 and sponsored a coffee break during the MEPC itself[86] reflecting that Morocco was the host COP22. At MEPC70 they also co-sponsored 70/7/6. Due to its invocation in the text and the make-up of the co-sponsors (hosts of COP21 and 22), the Paris Agreement can be seen assisting in the both the growth of the network of co-sponsors and the strengthening of their argument.

Submission 69/7/3 by the Clean Shipping Coalition (CSC) associated together the Paris Agreement and the comments of submission 69/7/1. The submission itself is titled: 'An appropriate IMO Response to the Paris Agreement' and stated:

> 3 For the International Chamber of Shipping (ICS) "the message from the UNFCCC Conference (COP 21) and the Paris Agreement is clear. All sectors of the global economy are now expected to determine how they can reach peak CO2 emissions as soon as possible before eventually decarbonising completely" and it agrees "that international shipping must play its full part in contributing to this objective".
> 4 The IMO has said that there "is a clear imperative now for IMO's Member States to rise to the challenge set by the Paris Agreement" with former Secretary-General Koji Sekimizu saying, "I now encourage Governments to bring the spirit of the Paris Agreement to IMO"2. The Secretary-General of the United Nations, Ban Ki-moon, has highlighted "the major role that IMO and the maritime sector has to play in translating… the Paris Agreement on climate change into tangible improvements in peoples' lives"3.
> 5 The stakes are high and the rhetoric supportive. An appropriate response from IMO is now essential […]

(Excerpt from MEPC69/7/3, submitted by the Clean Shipping Coalition p2)

In their submission, the CSC used the statements of the ICS and Secretary General to associate (i.e. connect) those actors into a network with the Paris Agreement and then

[86] Sponsoring a coffee break seemed to be a gesture of good will from one Member State to the rest of the MEPC and observers.

enrol that construction to pressure the Committee to accept the need to develop new CO_2 regulations. Equally, Paris itself had facilitated this submission thus influencing the contribution made to the negotiations by the CSC.

The final submission (69/7/4), which was submitted by WSC, CLIA, INTERTANKO and IPTA (all Industry Associations), is more of a commentary paper than a proposal. It makes reference to the Paris Agreement's focus on the relationship between poverty and international trade. This is an attempt to lay the groundwork for the argument that further CO_2 regulations may be costly for the shipping industry and this economic disruption could then negatively impact the many developing nations that depend on shipping. This argument was used later in the MEPC discussion and will be considered further in Section 7.4.4. Here again, we can see that Delegations attempt to make Paris into an actor in multiple ways. While the earlier Delegations enrolled it to pressure the development of new regulations, this network was attempting to enrol Paris as a conservative rationale to avoid the development of a target or emissions cap.

From the submissions alone it was clear that Paris had been acting on the Delegates in the run up to MEPC69. It catalyzed activity and caused new proposals to be submitted, both a new evolution of the proposal in submission 68/5/1 and the proposal in 69/7/1. Three co-sponsoring networks attempted to enrol Paris in their submissions. However, the way in which the Agreement would act upon the negotiations remained uncertain and outwith the control of any one actor. Enrolling an actor does not guarantee its cooperation, especially when the actor in question is dependent on a collective to take shape and form. The following section traces the agency of the Paris Agreement through the Plenary discussions in MEPC69.

7.4.4 Paris in the MEPC69: Discussion

The Paris Agreement was invoked repeatedly during the Plenary session at MEPC69 and acted upon the Committee negotiations. The discussion opened with the Secretariat's Report of the Outcome of COP21 and an account of the Paris Agreement. A speech about the Paris Agreement by from a UNFCCC Delegate then followed. Subsequently the Secretary General made a speech discussing the Paris Agreement and

calling for the Committee to base further action on the example set by Paris. As such, the Paris Agreement was immediately made present at the opening of the negotiations.

The first round of the Plenary discussion of Agenda Item 7 concerning the proposals in the submissions was 61 interventions long. Excepting the introductory speeches by the Secretariat, UNFCCC Delegate, Secretary General and the introductions to the submissions, the Paris Agreement was referred to in 50 out of 61 interventions, more than 80% of them. During these interventions, the Paris Agreement was enacted as a convincing catalyst. One Delegation noted that the same countries that had just committed to the Paris Agreement were sitting in the MEPC and so should consistently echo their commitments to targets across the two fora. Others constructed the Paris Agreement as a call for action requiring a response or a challenge. The Agreement was seen as a global effort that the shipping industry must also join.

The Delegations that enacted the Paris Agreement as reason to support the proposals used evocative language. The Delegations that did not support or that opposed the proposals merely welcomed or acknowledged the Paris Agreement as a recent global achievement. During the discussion, there were 36 Delegations (35 Member State Delegations and 1 Industry Association) that supported the two proposals (establishing a fair share or an IMO Determined Contribution)[87] and 23 Delegations (21 Member State Delegations and 2 Industry Associations) that either showed no support or opposed the proposals[88]. Two Delegations made conflicting interventions that when analysed contained a mixture of support and opposition.

The Paris Agreement was enrolled by 30 of the 36 supporters of the proposals as a reason for the proposals to establish an *IMO determined contribution* (MEPC69/7/1) or a *fair share* (MEPC69/7/2) in the reduction of global emissions. The enrolment of Paris constructed it as a pressure for the Committee to take action and as reasoning for

[87] Despite ICS stating in their introduction to their submission that they would like the ideas within to be carried forward, many Delegations still responded with support or opposition to the submission during the discussion.

[88] Not every member state speaks in Plenary. Some Delegations remain silent during the discussions.

accepting the proposals. It was positioned to convince the room for the need to agree to and support the proposals. 18 of the 23 Delegations that did not support or opposed the proposals also mentioned the Paris Agreement in their interventions. However, their referral was merely an acknowledgement of Paris, (they 'welcomed' the Agreement) rather than an enrolment.

The Paris Agreement was constructed as an actor and took effect as such. In MEPC69 it *interessed* support for the proposals, which contrasts with how it was enacted in MEPC68, where it was successfully enrolled to stall discussions of the possibility of the establishment of targets. As illustrated in Chapter 6, the outcome of MEPC69 was the formation of a WG to start discussions on the proposals in submissions 69/7/1 and 69/7/2 (and others) at MEPC70. The mobilization of Paris as a convincing actor was therefore successful as it effected the network's convergence on the decision to establish the WG for further discussions on the topic of new emission reduction regulation. Although any agreement in the MEPC is the result of many different factors, participants felt that the influence of the Paris Agreement was largely responsible for the decision to establish a WG at MEPC70. The following section gives a review of the Paris Agreement at MEPC70.

7.4.5 The Paris Agreement in MEPC70 Submissions and Discussions

MEPC70 occurred from 24th to 28th of October 2016, approximately 11 months after COP21. The Paris Agreement had steadily been gaining signatures and had reached the required level for entry into force by the time MEPC70 occurred (UNCC 2018). The Paris Agreement was once again enrolled in submissions (70/7/3, 70/7/5, 70/7/6, 70/7/8, 70/7/10, 70/7/12) to strengthen proposals and catalyse agreement to progress the development of new approaches for reducing CO_2. Commenting submissions 70/7/11, 70/7/13, 70/7/14 also constructed Paris as a pressurizing actor to accept the need to take action. The invocations of the Paris Agreement in the MEPC70 submissions represented a collective acknowledgment of the need to open discussions of further measures to control and reduce CO_2 emissions from international shipping. At the same time the content of the proposals differed between setting a '*contribution*', '*share*', or '*target*' and continuing to enhance the energy efficiency of ships. Submission 70/7/4, co-

sponsored by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay represented the network of opposition to proposals of *'targets'*. In their submission they stated:

> 'As long as world trade is growing, shipping will grow too. This responsive characteristic of shipping makes it impossible to determine its peak emissions in the same way that a country could do. In his statement at the Future-ready Shipping 2015 Conference, the former IMO Secretary-General, Mr. Koji Sekimizu, highlighted that measures aimed at reducing shipping's overall contribution of CO2 emissions, such as a global overall cap, "would artificially limit the ability of shipping to meet the demand created by the world economy, or would un-level the level playing field that the shipping industry needs for efficient operation, and therefore must be avoided"'

(Excerpt from 70/7/4, p2, submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay)

Later in the submission they added that:

> The overall emission cap is therefore fundamentally unfit for shipping.

(Excerpt from 70/7/4, p3, submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay)

This submission demonstrates clear opposition to the essence of the MEPC proposals that seek to establish some sort of industry-wide limit on emissions. Yet despite this resistance, the co-sponsors of 70/7/4 also state:

> 'There is a clear imperative for IMO's Member States to rise to the challenge set by the Paris Agreement for the international community and continue to make contributions to this global effort…'

(Excerpt from 70/7/4, p2, submitted by Angola, Brazil, Bolivia, China, Ecuador, India, Iran, South Africa and Uruguay)

Thus, although there may be no convergence around a new approach to regulating the future of CO_2 emissions regulation in shipping in the submissions, the agency of the

Paris Agreement has pushed Member States to acknowledge the need to open discussions in contrast to the strong opposition at both MEPC68 and 69. Even the network of resistance has been pushed past the question of '*if* there was a need to discuss further regulations for the reduction of GHG emissions?' to the question of '*what* should be done at MEPC70?'.

In the Plenary discussion, the Paris Agreement was enrolled in two ways. It was cast as a pressurizing actor to encourage the Committee to accept the need to establish a *share* of or *contribution* from shipping to the global efforts to reduce CO_2 emissions. Examples of these enrolments included encouraging the Committee to produce a meeting output that would *'send a signal following the Paris Agreement'* and to *'take definitive action to support the Paris Agreement targets'*.

On the other hand, networks opposing the creation of a '*target*', '*share*' or '*contribution*' voiced their concerns with the economic impact these might have on the industry. They argued that the growth of Shipping emissions is tied to the demand for the industry to serve world trade so if trade grows, Shipping's emissions will grow as well. Capping emissions, in their view, would limit the growth of Shipping. They also attempted to enrol the Paris Agreement to suggest that *'an absolute sectorial target'* would be inconsistent with the concept of differentiation between nations that was embedded into the Agreement. This network of opposition argued for the continued focus on enhancing energy efficiency and uptake of alternative fuels and the three-step approach.

Once the WG at MEPC70 was released from Plenary the traceability of the Paris Agreement lowered. This is due to the difference between Plenary and WG sessions (see Sections 5.2.1 and 5.2.2). Plenary interventions are high level and political, they lay out the national positions of Member States and the support and opposition for the general direction of proposals. WG discussions are where the Members can negotiate the specifics and begin to draft text. As a result, the majority of the interventions were alterations to the base document though the Paris Agreement was enrolled several times to attempt to pressure agreement.

In MEPC 69, the concept of Paris acted upon the Committee negotiations leading to the acknowledgement that further discussion of how to reduce CO_2 emissions was required and a working group for MEPC70. Thus, Paris acted to push the Committee to establish the space and time for this discussion (Jollands et al. 2015). By the MEPC70 discussions, the Delegates had largely agreed that there was a need to look at the development of new measures to reduce CO_2 from Shipping in the wake of the Paris Agreement and the negotiations moved to the shape, form and timeline of these measures.

The next section supplements the observations above with an examination of the interview data regarding the Paris Agreement and shows that it was influential in the establishment of the WG at MEPC70.

7.4.6 The Influence of the Paris Agreement: Insights from Interviews

ANT scholars argue that there is great value in an actor's own understanding of their reality and recommend engagement accordingly (Callon 1986; Latour 2005). As such, during interviews, participants were asked about the effect of Paris Agreement in the MEPC. Presented below is a collection of responses from participants that emphasize the influence of Paris on the negotiations:

'Well I think it's had a substantial impact. Since the IMO as a UN organisation, I think that makes sense that it would.' (Participant 33: Member State Delegate)

'...the rhetoric that they might have used in the past sort of softened slightly, sort of showing that there might be sort of future room for manoeuvre on these discussions.' (Participant 3: Member State Delegate)

Both Member State Delegates and members of COs shared this belief in the influence of Paris on the negotiations. One participant stated that: *'it provided more impetus to the Member States of IMO to make a quicker decision'* (Participant 20: A CO Delegate from an Industry Association) although he also commented that the effects may be temporary. Another interviewee stated he heard a, '…*tonal shift in how the IMO was*

treating the topic. Again, on the introduction of a paper that was headlined by the Solomon Islands, I think that was something that we probably would not have seen last year' (Participant 26: CO Delegate from an NGO)

A few Delegates from Industry Associations agreed that the Paris Agreement had a pressurising effect and commented that during the negotiations of the Paris text the '*primacy*' of the IMO as regulator of shipping activity had been challenged and even though Shipping was left out of the final text, the IMO was expected to make further progress. Indeed, during the Plenary discussion at MEPC69, many Delegations took the opportunity to comment that the IMO is still the '*best placed*' organisation to regulate shipping, which made apparent that this might have been questioned during the negotiations.

Another Member State Delegate gave more detail commenting that the Paris had a pressuring effect:
'I think that provided a bit more pressure on Delegates to move some of these discussions forward and discussions related to Greenhouse Gas emissions and you have our new IMO Secretary General that has, re-iterated that call, and you have other senior political leaders that are putting pressure so that I think definitely translated into an increased willingness among Delegates…to be more open to moving these discussions [forward].' (Participant 28: Member State Delegate)

Paris therefore was clearly influencing the collective yet it was also influential on an individual level as well:
'…the Paris Conference has a positive effect on agreement at the last MEPC[69]…in the very first instance you see China and Brazil and other developing countries have opposed severely on the discussion at the IMO. But you see after the Paris conference, China, in particular…became very, say positive attitude…and clearly I believe that the outcome of the Paris conference has the positive effect...on discussion at the IMO.' (Participant 25: Member State Delegate)

Indeed, the influence of Paris was noted to span more than one agenda item as participants felt that it had positively impacted the negotiations under Agenda Item 6[89]: *'So I think that IMO discussions on the data collection system, the fact that we achieved agreement at the last session was in large part due to the Paris Agreement'* (Participant 5: Member State Delegate). Similarly, one interviewee discussed their Delegation's expectation that there would be an intense discussion on whether the DCS should be voluntary or mandatory. They saw the casual acceptance of the DCS as mandatory as due, in part, to the effect of Paris.

In addition to influencing negotiations across different agenda items Paris was influential across time. A Delegate from a Member State felt that the Paris Agreement had affected not only MEPC69, but MEPC70 as well:
'...I don't think we would be with a Roadmap now if there has not been the Paris Agreement, but I must admit that it took a while, because until the coin dropped, I would say, last MEPC was very difficult, most people were not cooperative at all, except the European Union, that was the only one, and somehow things change and I would think that the coin dropped because the Paris Agreement was being ratified and now even entered into force so I think that changed definitely.' (Participant 29: Member State Delegate)

In discussing the influence of Paris, two Delegates explained that its influence was partly due to the need to keep a coherent and consistent national position on climate change across international fora. Participant 32, a Member State Delegate, specifically pointed out that all of the countries in the MEPC expressing reservations on the establishment of a *'fair share', 'intended contribution'* or a Working Group to discuss these options were the same countries that signed the Paris Agreement. He felt that there is no excuse for the resisting Delegations to *'sit on the side-lines'* and that everyone must *'come on board'*.

[89] Agenda Item 6: Further Technical and Operational Measures For Enhancing Energy Efficiency of International Shipping

The Paris COP21 and the subsequent Paris Agreement can be seen from the data to be *actors* meeting Latourian criteria with their traceable effects and influencing the MEPC (Latour 2005). Beyond this, they are *Meta-actors* because of their characteristics. Both the COP21 and the Agreement are external to, and have no physicality inside the MEPC. Instead, they are made visible and enacted through the heterogeneous collective. i.e. Delegates and submissions, decisions and reports. Furthermore, there was evidence that the influence of the COP21 and the Paris Agreement differed from MEPC68 where it acted to postpone discussions of new measures to reduce CO_2 and MEPC69 where it acted to establish a WG to open discussions of new measures. Enacted by the collective, the influence of Paris grew beyond the control of any one Delegation as it acted upon their negotiations.

7.5 A New Age for Agency

In following the actors and their work, this chapter has introduced a new actor-type, the *Meta-actor*. In Chapter 3, it was explained that one of the fundamental tenants of ANT is the abandonment of a priori divisions or dualisms (Callon & Latour 1992; Law 1999a). Together ANT authors have brought down the barriers between the 'Natural' and the 'Social' (Callon & Latour 1992; Callon 1986a) and further, they have applied a ruthless symmetry in their observations, analysis and writings (Callon & Latour 1992; Callon 1986a). Despite this, ANT remains limited in its treatment of the non-material (Entwistle & Slater 2014). An imbalance remains in the works of ANT between the focus on the material, for example humans, objects, devices and, the immaterial, i.e. entities without a durable material visibility (ibid.).

Though there is often a division of focus that favours material objects, even early ANT works acknowledged the influence of non-tangible agents. In their study of laboratory work and the construction of facts, Latour and Woolgar include 'time' as part of the heterogeneous network which created a scientific paper (Latour & Woolgar 1986, p88).

Following the principle of '*symmetry'* (Callon 1986a), recent ANT literature has been directly engaging with immaterial agency and constitutes an attempt to extend the attribution of agency under the banner of ANT. For example, boundary objects can be

conceived of as concepts as well as things (Gray et al 2014) and abstract constructions such as Culture and Sustainability can enrol other actors and act upon and within heterogeneous assemblages (Entwistle & Slater 2014; Jollands et al. 2015). This chapter has gone further by following three sources of immaterial agency as part of an account of the construction of control over an international industry. Furthermore, this chapter offers a typology and approach for identifying such agency and assembling it into the definition of the social, which is after all, the remit of ANT:

'*it is always necessary to redefine who is acting, why it is necessary to act together, what are the boundaries of the collective, how responsibility should be allocated, what are the best metalanguages to define collective action – this is what I call maintaining the origins of society in the present.*' (Latour 1986, p276)

The next section will explain the characteristics of a *Meta-actor*, the creation of the terminology and how these actors may be identified.

7.6 The Typology of a Meta-actor

Actor-Network Theory is often noted for its descriptive capabilities that are seen as a form of analysis (Latour 2005). ANT is viewed as not just a theory and methodology (Latour 1999a), but a vocabulary as well (Collins & Yearley 1992; Callon 1986a). It is full of meaningful descriptive words that when empirically applied become theoretical framings. ANT writers began with a redefinition of actor and have over the years added the following terminologies: association, actant, mediator, intermediary, token, obligatory passage point, boundary object, translation (and its sub terms), treason (and its sub terms) etc. Thus, when contributing to ANT, it is vital to use a convincing descriptive framing of the data and thus enhance the overarching theoretical *repertoire:*

'The vocabulary chosen for these descriptions and explanations can be left to the discretion of the observer. He cannot simply repeat the analysis suggested by the actors he is studying. However, an infinite number of repertoires is possible. It is up to the sociologist to choose the one that seems the best adapted to his task and then to

convince his colleagues that he made the right choice...' (Callon, 1986a, p4 in the online version, emphasis added).

To paraphrase Callon, this research has created and employed the terminology of *Meta-actor* to discuss an actor with a particular set of traceable characteristics and hopes to convince the reader of the utility of this actor-categorization. In doing so, the thesis also attempts to enrich existing ANT literature by focusing on immaterial actors and thus enhances the descriptive capacity of future ANT works.

7.6.1 The Characteristics of a Meta-actor

Just as the terms 'actant' and 'mediator' can be used to illuminate the qualities of the actor in question, the term *Meta-actor* denotes a set of characteristics and just as actants and mediators are still considered actors, so too is a *Meta-actor*. The word 'meta' is used to denote a level of abstraction. The term seemed suitable to describe an actor that only acts through other actors. Therefore, a *Meta-actor* is once removed from the tangible world. Furthermore, Latour, himself suggested that sociologists consider the best 'metalanguages' to explain collective action (Latour 1986, p276).

Much as the terminology of translation assists in following stages of network formation, the term *Meta-actor* allows the sourcing and characterization of abstract agency in networks. The *Meta-actors* in the MEPC, though individually different shared a common set of characteristics. They were influential and this influence was apparent through traceable effects. They were immaterial, lacking in the physicality of the human and objects in the network. They are brought into visibility by the actions of others and so they are enacted by a collective and finally they exist beyond the control of an individual actor. The four characteristics underlined above constitute the typology of a *Meta-actor*. Having explained the characteristics of a Meta-actor, the next section will explain how they can be followed.

7.6.2 Following Meta-actors

A *Meta-actor* can be traced (or identified) in much the same way as any other actor. Actors, associations and networks reveal themselves to the researcher (Callon 1986a) by the effects they have and the difference they make (Latour 2005). Employing this understanding of agency allows identification of action regardless of the source. With particular regards to their emergence in the context of this thesis, *Meta-Actors* were visible through controversy; for example, Consensus is enacted to resolve controversy, while the enactment of CBDR and the Paris Agreement, which are external to the MEPC network, opened up controversy within the MEPC.

The tracing of a *Meta-actor* is directly correlated with embracing the principles of ANT. When constructing an account of actors, the principle of symmetry must be applied in conjunction with a resistance to assuming inherent characteristics *a priori* (Callon 1999). Thus, the qualities of any actor or network must emerge from the data a posteriori: '*But where to localise agency in such a web? Where to pin it down? This becomes a matter of attribution, post hoc and after the action.'* (Law & Mol 2008, p58). Action, it seems, has consequences and the tracing of consequences will lead to the identification of actors and networks and the formation of explanations.

7.7 Conclusion

Three *Meta-actors* were identified in this chapter: Consensus, Regulatory Principles and COP21 and the Paris Agreement. These actor-types, though individually different share a particular set of characteristics which set them apart from the human and object actors detailed in Chapters 5 and 6. They were immaterial and enacted through the assemblage. Neither their definitions, nor actions were stabilized. Despite these actors being entirely dependent on the collective MEPC network to grant them an existence, they proceeded to assume a position of influence over the Committee and remained outwith the control of any individual actor. Their role in the MEPC is key, not only to understanding the development of regulations, which is, in itself, a form of control making, but also to advancement of understandings of power and control in general, particularly the link between dependence and influence. By following *Meta-actors,* we can see that associations that connect actors simultaneously make them stronger *and*

weaker. They become susceptible to influence by association. This will be discussed more deeply in Chapter 8.

The following and final chapter will offer a summary of the three data chapters and discuss key contributions in connection with current literature before concluding with a look at future research in this area.

8. Discussion and Conclusion

The IMO MEPC is a heterogeneous network that entangles environmental, political, international, geographical and economic concerns in its regulatory processes. Taking the MEPC as a black box and following the actors and associations that create it resulted in three data stories and four main contributions. The study overall is an observation of the constructive process of regulating and an explanation of how a network builds a device for controlling industrial activity across the oceans.

This chapter will begin by revisiting the core research questions and aims of the thesis. Chapters 5, 6 and 7 are then sequentially reviewed, recapping their key findings and discussing these in connection with current literatures before the overall contribution of the thesis is discussed. Following this the limitations of the study are reflected on as areas for further research before the wider opportunities for future research in the shipping industry are presented. Finally the chapter ends with some concluding thoughts.

8.1 Revisiting the Aims of the Thesis

This section revisits the issue that stimulated the research project and the research questions that guided the study. Our globalised world is dependent on the shipping industry (George 2013), while our environment is under threat from human-industrial activity. The high seas are considered the last frontier, a 21st century Wild West (Langewiesche 2004). There is a growing need to understand how we currently regulate shipping activity in this area. Climate change is a current and serious issue, stemming, at least in part, from human industrial activity, and emissions from the shipping industry are on the increase (Wan et al. 2018; Smith et al. 2015).

Existing work in shipping focuses predominantly on the impact of regulation (Stevens et al. 2015; Devanney 2010) and the regulatory avoidance possible with the Flags of Convenience/Open Registry System (DeSombre 2006). While there is recognition of the need for further regulation (Cullinane & Cullinane 2013; Lister 2015, Wan et al.

2018), little is written about the process of creating regulation. Criticism of the IMO for its slow speed of regulating abounds in both academia and media outlets (Cullinane & Cullinane 2013; Lister 2015). The majority of the literature focusing on the IMO gives mostly a general overview, largely unguided by theory, with somewhat unclear methods (See for example Tan 2006; Karim 2015 and Hackmann 2012 respectively). Against this backdrop, there is a need to better understand the regulatory network that attempts to control industrial activity and respond to environmental problems.

Accordingly, this thesis sought not to understand what *has* been done, but *who* is doing *what* and *how*. It aimed to understand the Organization through which all state-led regulatory activity is carried out. From the existing literature, reviewed in Chapter 2, a need for an in-depth observational study of the regulatory process was perceived and two guiding research questions were formed:

1. What is the IMO MEPC?
2. How does the IMO MEPC create regulation?

Actor-Network Theory was selected as the conceptual toolkit for this project due to its appreciation of non-human participants in organisations and processes (Latour & Woolgar 1979; Latour 1983; Latour 1990; Latour 1992); its understanding of power, control and knowledge as a network construction (Latour 1986; Callon 1986a; Law 1986b; Latour & Woolgar 1979); and its roots and proven applicability in scientific-technical communities (Latour 1987; Latour 2004a; Latour & Woolgar 1979). ANT fundamentals and concepts were applied both as a guiding methodology for data collection and as a theoretical setting for the thesis narrative. The term ‘setting’ is used here in both senses of the word. ANT surrounds and entangles the data i.e. it is the setting in which the data stories are told, however it is also what holds the data in place as a whole. Like a gemstone in a ring, the data has been mounted for viewing, held in place in this thesis by Actor-Network Theory.

This project identified the MEPC as a black-boxed regulatory network and aimed to unpack and explain it, foregrounding and discussing the actors and associations to

assemble them into a durable whole (Latour 2005). As a result, the research questions were answered with rich detail and a greater understanding of the construction of control in an international industry with areas of unclear or absent jurisdiction is presented.

Although ANT writers value the interconnectivity and relationality of actors and associations (Boelens 2010; Latour 2005), there is a need to foreground parts of the network and specific actors in order to describe and discuss them. These constituent actors represent and explain the *whole* (Callon & Latour 1981; Latour & Woolgar 1986; Latour & Woolgar 1979; Latour 1983). As such, data chapters were specifically written and ordered to break down the network into its constituent actors and processes. Hence each chapter is individual and yet also part of the construction of a collective account of networked control. The chapters were also ordered specifically as the researcher 'experienced' them. The *spaces, people* and *things* (Chapter 5) were experienced first and because of these actors the *processes* (Chapter 6) could be traced and appreciated before the (new) *'missing masses'* (Chapter 7) were assembled into the account. The next section will review the key findings of Chapter 5 and how these contribute to the literature on the IMO and textual agency.

8.2 Revisiting the Data: Spaces, People and Things

In Chapter 5 *spaces*, *people* and *things* were assembled to constitute and explain the IMO MEPC. Chairmen, Delegates, artefacts, rooms and texts (inter alia) gather periodically together to produce the MEPC meeting. The first actor discussed was the IMO Headquarters, which provides the network with the facility to temporarily converge. Some of the actors (i.e. texts, Delegates, Secretariat) work throughout the year however the network is physically dispersed. Most of the work carried out during the year is done in preparation for MEPC meetings. The discussion, decisions and drafting can only occur in the IMO HQ. Thus the physical space gathers the assemblage together facilitating the work of every other actor in the network. The space itself seemed to be constructed and furnished, purposefully or not, to represent international cooperation and encourage compromise and Consensus. The international artefacts evoke differences; different cultures, histories and heritages and yet they also suggest a

sense of togetherness and appreciation for the work of the IMO. Thus, the space both captured and enacted the purpose and principles of the Organization.

Chairmen were found to be Obligatory Passage Points (Callon 1986a) through which all information, positions, decisions and agreement must flow. Chairmen are the Consensus-builders, responsible for conducting the discussion and negotiating the alignment of points of compromise in the Member States positions. Furthermore, they were observed to mobilize other actors at their discretion in order to achieve progress. They are a focal node whose directive actions bring the network's disparate positions together.

The Secretariat organizes and contextualizes the work of the Committee during IMO meetings. They provide structure and consistency both during and between meetings. They are neutral assistants and can assist Member States as mediators, helping them to achieve understanding and Consensus. They also have a representational role themselves, capturing the complex discussion in the IMO and presenting these at other international regulatory fora. They provide procedural advice and assist in the submission and drafting of texts. Ultimately, they are the facilitative constants of the Organization.

The Delegates build and maintain relationships, capture and represent interests and create submissions throughout the year. Their role is multi-faceted, with some having a separate organizational role as well as their representational one. Delegates 'stand for' larger networks of actors beyond the Organization (Callon 1986a; Latour 1992) acting as network representatives for Member States, Industry Associations and NGOs. They displace the interests of external organisations (Latour 2004a), deploying these interests into submitted texts and interventions then subsequently into decisions and regulatory documents. The trust and relationships created and sustained between Delegates is generative of regulatory work and the associations between these Delegates contribute to the process of regulating. While the Chairmen are *Consensus-builders*, the Delegates are *Consensus-negotiators*. They must strive for Consensus and yet they must also forward the interests of their own Delegations and work for a favourable outcome.

Thus, as they negotiate, they enact and perform Consensus, an idea that was revisited and unpacked in Chapter 7 with regards to the entire assemblage.

Within the MEPC, time was found to be a key actant, particularly when managed and mobilized by the Chairman. Break times and margin times in particular had largely facilitative effects on the development of regulation by the MEPC network. Break times support the role of the IMO HQ. They allow for the collective to talk outwith the conventions of formal discussion and to gain understanding of national positions, industry views and develop new ideas. In a sense, time and space associate together during the MEPC to ease the communication of the network and the progress of negotiations. Equally, time could be a pressurizing actor in the network, both by the withdrawal of breaks and by the passing of time overall. Splinter groups in the discussions were also assembled into the explanation of the MEPC as procedural actants due to their effect on the negotiations. Again, they facilitated and eased the work of other actors in the network and stimulated progress when mobilized.

The technology of the IMO is mundane (Woolgar & Neyland 2013) and yet when associated, audio-visual systems, laptops, programs and an online database all mobilize into an infrastructure that is responsible for the visibility and comprehension of the discussions themselves.

Text documents were found to be integral actors in the MEPC and indeed the wider IMO network. They performed a variety of actions and changed roles at different stages of the process. They were found to report, submit, propose, request, represent, inform and comment. They are *association-makers*, circulating between actors and throughout the network that constitutes the MEPC and IMO. They were able to connect the IMO to associated organisations, for example the E.U. and its own umbrella organisation, the U.N. They also displaced and drew in external events, information and research, embedding these in the process. The reports that are created during the meetings summarise the discussion and agreements, capturing and archiving the Consensus level achieved and connecting meetings across time. Submissions capture, and stabilize an idea. They are a snapshot of an idea and a network. Proposals in submissions are in a

state of flux but have been temporarily captured for viewing and discussion by the texts. Submissions provided a focal point to view and discuss regulatory proposals before they were reshaped by Consensus and moved forward by the report.

8.2.1 Key Contribution: Textual Agency

Chapter 5 began to describe the network that controls the international shipping industry. The detailing of the roles of actors such as Delegates, Chairmen, Secretariat, space, time, technology and texts contributes empirically to the existing literature on the IMO, which has not yet examined these roles individually and collectively when seeking to explain the making of control. It is particularly useful to understand Chairmen as *Consensus builders*, rather than simply intermediaries (Latour 2005); Delegates, Submissions and Reports as *spokesmen* (Law & Callon 1992; Callon & Latour 1981; Latour 1983; Callon 1986a); the Secretariat as *boundary actors* (Eden 2009; Star & Griesemer 1989); Space as an *enactor of principles*; time as a *catalytic actant* and technology as *vital facilitator*. Each distillation of core agency in the network represents a novel offering to the understanding of an international governance process, however the key contribution of the chapter is the extension of textual agency.

Exploring the work done by text documents became vital to the explanation of how the MEPC functions. Texts in the MEPC, have a variety of roles which can change as a text moves through the process. Text submissions linked sub-networks of co-sponsors, acting as a boundary object (Star & Griesemer 1989) around which the storm of translations (Callon 1986a) could begin in advance of the meeting. Like the fashion model's portfolio in Entwistle and Slater (2014), submissions are moved and changed through network interaction and like the computer screen in Knorr Cetina & Bruegger (2002) they also gather up dispersed market activity 'out-there' and make it possible for participants to interact with. Submissions, therefore, are 'appresentational devices' (Knorr Cetina & Bruegger 2002; Entwistle & Slater 2014). Additionally, submissions acted as temporary Delegates until time (meeting) and space (Headquarters) allowed the Delegates to take up their full representative role in the meeting. Submissions captured and stabilized proposals for review in advance of meetings. During the meeting, these proposals were displaced from the text into the negotiations before the results were once

again stabilized by another text, the meeting report.

While submissions stabilize proposals and positions or individual or sub-networks of the MEPC, meeting reports capture and stabilize the discussions and decisions of the collective. Documents, in general, act as conduits to past agreements at past meetings (reports), to agreements and outcomes of other international bodies and, to research and innovation in the industry itself. They are able to feed essential information into the discussions that can be used to form new regulatory instruments. Reports are constitutive of the moving assemblage that is regulation (Entwistle & Slater 2014).

In ANT literature, many inscriptions (texts) have been constructed as agential actors (Latour & Woolgar 1986; Law 1986b). Indeed the seminal work of ANT, *Laboratory Life*, examined the construction of facts and sought to explain how scientific activity is embedded into textual outputs (Latour & Woolgar 1979). In essence their work captured the heterogeneous assemblage that create a text, rather than capturing what texts do in heterogeneous assemblages. The question of what texts do in organisations was answered by (Cooren 2004) who found that texts have multiple roles in organisations and detailed these different functions. The empirical insights gained in this thesis show, not only what texts do in the MEPC but that texts are capable of facilitating and capturing the socio-politico-legal agencements of international regulation (Cloatre & Dingwall 2013). Ultimately MEPC documents are foundational to the formation of regulation.

Notably Chapter 5 not only examined what texts do, but also what they don't. Thus, it contributes two limitations of the agency of text in such settings. Texts cannot capture the relationships between Delegates in the MEPC. While Delegates noted that trust, trust-building and relationship maintaining was important for their work, indeed even generative of the work, none of these human-to-human relationships were captured in the texts. The documents in the IMO MEPC are of a formal, impersonal and concise nature. Neither the trust held or lost between Delegates nor the form of relationship between them was captured in official texts. Submissions could only show connection though co-sponsorship. Thus they were unable to capture the extent and shape of

Delegate-to-Delegate relationships.

Furthermore, regulatory texts were unable to capture the *shape of practice*. The IMO Convention, rules of procedure and guidelines for work were extensively detailed yet they did not mention the concept of Consensus, though this concept was found to be core to the processes of the Organization. Indeed, the Basic Document contains information on voting procedures while in practice the assemblage works to avoid these procedures. This paradoxical relationship between Consensus, Voting and the establishing texts of the IMO was explored in Chapter 7. Ultimately, that which was visible in the text was invisible in practice and *vice versa.*

In summary, texts have an integral role in organizational functioning and further, they provide durability (Latour 1990), consistency and structure across time. Chapter 5 therefore contributes understanding of textual agency not only in an organisation, but in a regulatory process. In addition, the limitations of texts were also identified. They were unable to capture two elements of the organizational functioning; trust and relationships between and among Delegates and the shape of practice in the MEPC.

Future work considering the agency of texts must ask what they do, but also what they do not or cannot do. This would account for the strength and limitations of textual agency and the disparity between the reality laid out by organizationally constitutive texts, such as rules of procedure, and the reality of practice.

After exploring the role of texts, the thesis moved on to follow the processes of the Organization that had been highlighted by the movement and circulation of submissions. This became the basis for Chapter 6, which will be discussed next.

8.3 Revisiting the Data: Translation and Treason

Chapter 6 sought to trace the processes by which the MEPC constructs regulation. These were identified to consist predominantly of creating submissions (i.e. proposals); discussion; network convergence and report writing. As acknowledged in Chapter 4, ‘following the actors’ (Venturini 2009; Latour 2005) seems simple in principle but is

more difficult in practice. In both the fieldwork and the construction of data into a narrative, this methodological suggestion involved making choices. The submission by the Marshall Islands at MEPC68, was chosen to anchor the story, since this submission proposed a discussion of new and further regulation to reduce GHG emissions. This text generated discussion at subsequent meetings and was constructive with respect to the Roadmap created at MEPC70. With the actor-text chosen, the process was traced and the data 'mess' (Law 2004; Law 2007b) was organised by framing moments of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013). The three MEPC meetings were treated as mini-cases. The aligning of interests, building of networks of agreement and opposition was then observed and deconstructed during each mini-case. The actors were identified as supporters, modifiers and resisters as attempts to *mobilize* (Callon 1986a) or *distort* (Galis & Lee 2013) were observed. At the conclusion of each meeting, the Committee coalesces, compromising individual positions into a decision and report and ultimately into regulation.

8.3.1 Key Contribution: Understanding a Network Convergence

ANT is both theory and methodological approach (Brown & Capdevila 1999; Jóhannesson 2005; Rydin 2012; Dalsgaard 2013). Accordingly, Chapter 6 represents a methodological contribution by applying the vocabulary of *translation* (Callon 1986a) alongside its shadow companion: *treason* (Galis & Lee 2013) to follow the negotiations that brought the MEPC network to a decision. These concepts had been intended for use together to further the symmetry of analysis (Galis & Lee 2013), however they have only been used separately in existing works (Callon 1986a; Galis & Lee 2013). Applying them in conjunction allowed a new account of international organizational discussion and interest alignment to be created.

The vocabularies of translation and treason were applied when following processes submission and discussion, particularly when framing the transitional moments in the discussion during which the interests of the network were either brought together or diverged. Data presented in Chapter 6 showed that actors held together in a network can have divergent and conflicting interests in practice, but equally, that these diverging interests can be brought into alignment through repeated translations. *Translation* and

treason were effective when combined to unpack the construction of positions in international negotiations. Lastly the chapter showed all actors, from the Chairmen and Delegates to Consensus and Member Equality, were working to bring the network into alignment.

Chapter 3 explained that *translation* explains network-construction and the ability of certain actors to mobilize others to their will and in so doing gain a networked position of control (Callon 1986a), while *treason* explains how actors can be constructed as weak and rejected from a network (Galis & Lee 2013). The cases are extreme with one showing a network construction falling apart (Callon 1986a) and the other showing the triumph of one group over another (Galis & Lee 2013). Chapter 6, on the other hand, depicted a more mundane (Woolgar & Neyland 2013), yet important facet of organizational life; cooperation and compromise. In the MEPC cases, neither unravelling nor ostracism occurred. Rather, the MEPC network is held durably together and yet the actors within are often divergent in their needs and agendas.

Translation and *treason* vocabularies were used to give a balanced account, which traced the discussions showing that the divergent network was negotiated to a point of compromise. Therefore the thesis offers insight into what brings a network together, rather than how networks lock actors out (Galis & Lee 2013) compete (Callon 1980; Callon & Latour 1981) or unravel (Egan 2014; Law & Callon 1992; Jollands et al. 2015; Callon 1986a). The application of *translation* and *treason*, not only provided insight into the discussion process but also pointed to a question: *What makes divergent interests align in a network that is already held together by an infrastructure?* In answering this question, the third part of the network was assembled, the new 'missing masses' (Latour 1992) were accounted for and Chapter 7 was created to explain the actors that bring interests together (see Section 8.4 for further discussion).

In the MEPC Member States are not able to individually, or collectively, form durable positions of power and influence over others. This is due to the principle of Equality between Member States and the practice of Consensus. Thus, influence and power in the Organization can be tempered by the rules and values held by the Organization. This

chapter therefore contributes to the understandings of heterogeneous control in contemporary organisations.

The IMO is held together, inter alia, by the Convention Text, Rules of Procedure, Funding, Delegations, Headquarters, Secretariat and its technological infrastructure. The issue faced by the IMO is not that it, as a network, will break apart or that certain Delegations could be pushed out. Instead, this thesis illustrates the difficulty faced is aligning the interests of up to 174 Member States and Consulting Organisations. The three cases highlighted that this process is time consuming and thus Chapter 6 contributes to understanding the slow speed of regulation (Kopela 2014; Shi 2016; Wan et al. 2018).

Appling *translation* and *treason* vocabularies in combination is a useful methodological tool for scholars of organisations to create a fuller and more balanced picture of everyday networks in organisations. When applied in isolation they can result in a dramatic and one-sided account which details more extraordinary network events, i.e. the unravelling of a network, or the triumphing of one group over another and actors being locked out of networks. We need to be able to apply these vocabularies to understand the daily, mundane push and pull of actors that are held together in an organisation (network) but are not always in alignment. As such, this approach should be taken further into other empirical settings, particularly in arenas of substantial actor discussions whereby networks undergo trial by negotiation. The following section reintroduces key data from Chapter 7 before discussing its contribution.

8.4 Revisiting the Data: Meta-actors

The third and final data chapter presented three actors that were grouped under the title *Meta-actors* to highlight their particular characteristics and influence. The commitment to symmetry necessitated by ANT allowed for the identification of Consensus, Regulatory Principles and the Paris COP21 and Agreement as actors and, after examination, their categorization of *Meta-actors.*

After the first observation of an intercessional working group meeting in September 2015 and the preliminary interviews it was clear that Consensus was an important concept to unpack. After examining the IMO Convention and Rules of Procedure and in 221 pages not finding Consensus mentioned once, it was imperative to understand how this concept could achieve a durable influence and indeed to understand it as an actor itself. From there, Consensus was followed in the data in order to deduce what it was and how it acted. This was done by examining its description during interviews and observing its enactment in the MEPC69 in April 2016 and MEPC70 in October 2017.

From observing the MEPC submissions and discussions and in conversations both at the meetings and in interviews, Regulatory Principles were identified as influential actors. Many experts discussed the conflict between the regulatory principles of Non-Discrimination, which is applied in the IMO, and the principle of CBDR, which is part of external international governance frameworks. Indeed, the tension was often positioned as one of the big questions of the time; *'how are these two conflicting principles going to be harmonized?'* When traced, these principles were enacted in different ways. CBDR was particularly impactful when enacted, often stalling the discussions and delaying attempts to achieve progress in the face of tight time constraints while Non-Discrimination, was mobilized to challenge and prevent the enactment of the external principle CBDR. Hence, the regulatory principles were agential in the discussions.

Another actor that was identified in a similar way was the Paris COP21 and the later Paris Agreement. Whilst the roles of the Delegations, space, Chairman, Secretariat, texts and technology remained consistent across the meetings, this actor's role and influence changed from meeting to meeting. It was first noted in the data due to pure repetition in the submissions, discussions and conversations at the meeting. By deconstructing its influence, Paris was found to act in different ways at different points in time and in different meetings. In MEPC68 it mobilized for the network of opposition to the discussions of emissions *targets* for shipping, strengthening the translation of postponement. In MEPC69 however it mobilized for the network in

support of opening discussions on *fair shares* and *determined contributions* and influenced the establishment of a WG tasked with taking these discussions forward.

By MEPC70 the Paris Agreement had reached the required signatories to enter into force and had successfully pressured all sub-networks (support and opposition) to agree that they must find a way to respond to the aim of the Paris Agreement to limit climate change. The discussion in the MEPC moved from whether a WG *should* be established to what new CO_2 reduction measures should look like and the creation of a timeline to develop and implement them.

8.4.1 Key Contribution: Meta-Actors and Modern Agency

By following the actors and processes identified in Chapters 5 and 6 respectively, a question arose: *What influenced divergent interests to be brought together?* The answer to this question lay in the conceptual actors, enlivened by the practices of the Organization. These actors were Consensus, Regulatory Principles and COP21 and the Paris Agreement. Their emergence and their characteristics allowed for the creation of the terminology *Meta-actor*. Equally, although they were individually grouped their shared features were distilled into a typology. *Meta-actors* are non-physical, enacted by a collective, beyond the control of individuals and influential in a network. They can be identified and deconstructed *'post-hoc'* from the data (Law & Mol 2008). The terminology and typology extends the application of ANT *symmetry* and understanding of networks of control.

In Chapter 3, the work of Entwistle and Slater (2014) was discussed as a recent furthering of the principle of *symmetry*. Finding that 'culture', a seemingly realist invocation of actors was actually agential in the production of a *model's look*, they insist that such slippery concepts can, and should be, assembled into the definition of the Social. Building on this work, Chapter 7 assembled together a group of abstract influencers and followed their agency though the MEPC network. Much in the same way as the actors in Entwistle and Slater's account sought to simultaneously capture and produce culture through the visual positioning of the model, the actors in the MEPC aim to achieve Consensus while simultaneously constructing it. Thus, Consensus is the

culture of the IMO MEPC. It is something produced by the actors, beyond individual control and influential in the process (Entwistle & Slater 2014). To employ a shipping metaphor, Consensus is the destination, the engine and the voyage itself all at once.

The regulatory principles and the Paris COP were equally abstract in the network, however, once enacted they became discursive actors capable of either catalysing agreement or stalling it, depending on their mobilization. As such, these abstract entities act to influence the network and become entangled in the production of regulation (Entwistle & Slater 2014). Furthermore, the MEPC is a nexus in which the conflicting regulatory concepts of Non-Discrimination and CBDR were mobilized. CBDR was found to stall progress towards MBMs for the control of CO_2 emissions (Strong 2018). Echoing the work of Jollands & Quinn (2017), the agency of CBDR as a conceptual enrolment from one realm into another was found to be problematic for the achievement of progress on an environmental issue.

The focus on identifying and following *Meta-actors* also builds on the work of Jollands et al. (2015). In their study, the authors employ the vocabulary of translation in order to follow the construction of sustainability as a core organizational value and a network to hold it durably in place. Unfortunately, due to a series of events, the network does not translate 'sustainability' into a position of durable influence within the organisation. Instead it unravels in the face of internal and external change and profitability concerns (ibid). The authors demonstrate the ability of a concept to form a network around itself (at least temporarily) and thus emphasize conceptual agency. This thesis followed three conceptual actors but rather than following the construction of a network around them, their enactment in the pre-established MEPC network was traced and their influence explained. Hence, this thesis contributes the description of how durable concepts (or values) mobilize in practice, which adds to the understanding of the influence of abstract actors (Entwistle & Slater 2014; Jollands et al. 2015; Jollands & Quinn 2017).

This contribution therefore confirms and extends modern conceptualizations of agency. By acknowledging values, beliefs, concepts, principles and other such abstractions that are invoked by the physical network, the principle of symmetry is more sensitively

applied and the methodical approach of describing the network in full has been reinvigorated (Latour 2005; Venturini 2009). This thesis argues that regulation can be understood as a constructed, moving assemblage (Entwistle & Slater 2014), shaped and progressed by a *socio-technical-conceptual* network. The contribution of *Meta-actors* offers a new method for ANT scholars to identify and follow abstract conceptualizations as actors, and to trace their influence networks. In doing so it encourages ANT scholars to engage more effectively with alternative sources of agency in networks.

In identifying and characterizing Meta-Actors the explanation of the development of regulatory control by the MEPC network was made whole (Latour 2005) and a link between collective influence and vulnerability emerged. This leads to the next section, which discusses the overall contributions of the thesis to understandings of control.

8.5 Contributing to Understandings of Control

This account of the development of regulation in the MEPC contributes both to empirical and theoretical understandings of control making. Empirically this thesis responds to an absence of in-depth examination in the literature as discussed in Chapter 2. The thesis details the actors, associations and processes involved in developing regulation. Additionally, the depth of this ethnographic explanation of the MEPC at work sheds light on the complexity of the manufacture of regulation and responds to critiques over the speed of regulating (Kopela 2014; Shi 2016; Wan et al. 2018). At every meeting a divergent heterogeneous network must converge to a point of agreement. In order to do so proposals must be diluted and reshaped and positions must be compromised. Understanding the agency of Consensus and CBDR provides insight as to why there are no MBMs as yet in Shipping. Regulation is tied to the conditions and associations through which it was created (Entwistle & Slater 2014). In other words, by explaining the Organization and its processes and by following the negotiations ethnographically, the regulatory outputs can be more deeply understood.

This study contributes to the relatively small corpus of ANT literature dedicated to demystifying control. Regulation as a form of control is the output of a heterogeneous

assemblage with the conditions for its development grounded in socio-technical-conceptual mobilizations. Furthermore, while traditional views of power and control in ANT see it as only in existence when enacted (Callon & Latour 1981; Callon 1986a; Latour 1986; Law 1986a; Law 1986b; Law 1991a; Law 1991b; Law 1992) and more specifically as the effect of *a* mobilized heterogeneous network (Callon 1986a; Law 1986b), this thesis suggests that there are *two* interdependent networks in the construction of control. The first stage is the creation of a device for control, i.e. the regulation itself by a construction network. The second stage, and the realization of control, is when this device is circulated through implementation network(s) (for example Flag states, Port Authorities, Classification Societies, Ship Management Companies, Crews etc.). At the same time, it must be recognized that any work done in one network will be influenced and shaped by the work of the other. Thus, Mol's conceptualization of realities can be applied to understanding control; networks of construction and implementation *'don't simply co-exist side by side, but are also found inside one another'* (Mol 1999, p85). In the context of Shipping, for example, the problem of flag switching is one for the network of implementation, however the MEPC, as constructors, respond to the practical issue by adopting the principle of Non-Discrimination in their work.

Understanding control as not only *collective* (Latour 1986; Law 1986b) but as *multiple* (Mol 1999) allows it to be untangled into stages, forms and networks and represents a nuanced approach for ANT scholars to take forward. This framing may have particular relevance to ANT scholars of markets. Regulation itself can be seen as a market (controlling) device (Harrison 2014; Callon et al. 2007) and following its construction contributes to the understanding of the markets it seeks to control. In the MEPC, the principles and practices for developing regulation were considered essential for successful implementation. As such, the device for control is *shaped by* that which is it is *shaped to* control. To understand regulation is therefore to understand (in part) the market itself.

Additionally, separating studies of control into studies of construction and studies of implementation allows us to perceive the balance of attention in the literature, or what

Latour might term, (scholarly) *matters of concern* (Latour 2004b). In the context of Shipping, the literature focuses heavily on implementation and outputs rather than construction as a *matter of concern* (ibid). Chapter 2 demonstrated that the existing Shipping literature is focused more heavily on the implementation of regulation rather than its construction. Scholars in a number of different environmental and regulatory contexts may find purchase in framing control as *multiple* in order to perceive the existing balance of attention between networks of construction and networks of implementation (Mol 1999). Thus under-researched networks can be more easily identified.

On another level, this thesis contributes to the theoretical understanding of power through networked control. The *Meta-actors* were found to be influential over the assemblage however, they were also dependent on that same assemblage for their existence (Jollands et al. 2015). Thus, we can begin to understand that while a durable heterogeneous network may result in a powerful position, it simultaneously creates dependency. The construction of networked control is therefore simultaneously the construction of networked vulnerability. In this way, Law's definition of control (1986b) is harmoniously entangled with Callon's explanation of power construction (1986) and Galis & Lee's appreciation of weakness (2013). This paradoxical link between power and vulnerability merits further elucidation in other regulatory contexts and studies of governance organisations.

In conclusion, the thesis offers these two theoretical notions to enhance ANT understandings of power and control: (i) control is the multiple result of interdependent heterogeneous networks of construction and implementation and (ii) any actor that achieves a level of influence through a relational network simultaneously assumed a position of vulnerability. The chapter will now move on to acknowledge the limitations of the study showing how these are opportunities for further research in this area before moving on to discuss opportunities for future research in this highly complex industry.

8.6 Limitations of the Study as Opportunities for Further Research

It is generally accepted that with every piece of research undertaken there are limitations as to what can be done practically. This section will acknowledge and reflect on this project's limitations recognising that each can, and indeed should be, seen as an opportunity for future research.

In Chapter 5, the proposal from the Marshall Islands was taken as the genesis of a regulation and was followed over the next 18 months spanning three meetings. However, only an agreement of the Roadmap to create regulation had been reached by the end of the fieldwork period. According to the Road Map created in MEPC70, a revised IMO Strategy including *'short-, mid- and long-term further measure(s), as required, with implementation schedules'* is planned for MEPC80 in Spring 2023 (MEPC70/18/Add1: Annex 11, p2). Furthermore, it can be a long time before a drafted text reaches the required signatories for enforcement. The regulation on the treatment of Ballast Water took 13 years from adoption by the Committee to reach entry into force[90]. The need for further regulation has been, for the most part, agreed by the Committee, however the exact form this regulation should take is still undecided and will not be fully settled for years to come.

Given that the timeline for the development of a regulation to entry into force is both long and unpredictable, it would not have been possible to follow the development of a regulation in its entirety within the context of this doctoral research. The limitation, however, opens up the opportunity to conduct a longitudinal study following one regulation throughout the process. Direct observation of the process would likely yield rich data, based on the findings in this thesis, regarding the translation of ideas into accepted regulations. Such a study would allow for comparison of the first proposal

[90] The Ballast Water Management Convention was adopted in 2004 with three phase-in dates, 2009, 2012 and 2016 however the convention 'stipulated that it would enter into force 12 months after ratification by a minimum of 30 States, representing 35% of world merchant shipping tonnage' (IMO n.d., p6). Those criteria were only reached on 8th September 2016, and so the regulation entered into force on 8th September 2017.

with the final result and thus demonstrate the difference that multiple translations make to the essence of an idea.

The thesis set out to understand the MEPC as a network involved in the creation of control over emissions from Shipping. In assembling an account of the actors and associations of the MEPC the first stage of control has been explored. However, as ANT has shown, power does not lie within an actor, it lies with those who choose to submit to durable mobilization (Latour 1986; Law 1986b; Jollands et al. 2015). As such, the second stage of control can only be explained by the network of implementation and the reactions of the industry. Regulation, therefore, can be understood as a device aimed to produce control upon implementation. A further network of actors mobilizes this device in a network of implementation. Therefore, we now need to better understand the journey of a regulation through different networks from adoption to implementation. Although there have been studies on the impact and effectiveness of current regulations (EEDI and SEEMP) as discussed in Chapter 2, there is a need to understand the network of enforcement in the shipping industry. Future work could apply ANT to trace and deconstruct the assemblage in the shipping industry that enforces regulation, i.e. the Flag States, Port Authorities, Classification Societies, Captain, crew and the various non-humans, for example the sea itself, which also factor into any of the applications of regulation. A possible avenue to open up networks of implementation is to explore the new IMO Member State Audit Scheme and Implementation Support (IMSAS) which became mandatory on the 1st January 2016 and aims to assess and assist implementation of IMO conventions by Member States (IMO 2017a; IMO 2017b). In carrying out this work, understanding of control over Shipping emissions would be further enriched.

It became apparent during the data collection and write up that the work done by text submissions was vitally important and that they are key actors in the process. Accordingly the process of creating submissions was explored in interviews with Delegates, which illustrated that this process is undertaken outwith, and in advance of the meetings. Therefore, texts are created by actors communicating across the world in email, phone calls and occasionally at in-person meetings (see Chapter 4 for more on this). Although the process was recreated in this thesis through interviews, being able to

directly observe this process would preferable. Further work to address this could follow the progress of a submission, punctuating the stages of *problematization, interessement* and *enrolment* (Callon 1986a) of co-sponsors with in-depth interviews with the co-sponsors themselves. Alternatively, a collaborative team could undertake observation of selected Member Delegates see for example Campbell, Corson, et al. (2014); Campbell, Hagerman, et al. (2014); and Gray et al. (2014). Rather than following the events, future individual or collaborative work could follow the delegates themselves as they carry out their work in their home countries and at international negotiations.

A more minor limitation was the presentation of data weighed against the need to comply with the confidentiality rules of the Organization. The MEPC meetings are held in private[91]. Although there is no shortage of data in this thesis, from observation notes, vignettes, photographs, text excerpts and interview quotes, it would have been preferable to include direct quotes from Member States' interventions in the Plenary WGs discussions. Future scholars should be aware of these issues when studying the IMO. Although presented here as a limitation, this thesis offers a variety of data and the researcher maintained a level of confidentiality in line with the Organization's own rules and standards.

The aim of this thesis was to assemble an explanatory network. As such, the amount of focus that could be given to any single actor had to be carefully balanced against the need to reassemble the whole (Latour 2005). Future research could shadow one Delegation and observe it alone in more detail. This may allow a researcher to be privy to the conversations that occur in the margins of the MEPC meeting and to the preparatory Delegation meetings that occur in advance of the MEPC. The relationships between Delegates were noted to have both a generative quality and a facilitative role in the work. It would be helpful to study these more specifically. Equally, further research

[91] The MEPC Rules of Procedure (as well as the MSC Rules of Procedure) state: *'The Committee may decide to hold meetings in private or public. In the absence of a decision to hold meetings in public, they shall be held in private.*' (IMO Basic Document 2010, Rules of Procedure of the Marine Environment Protection Committee, Rule 9, p109)

could focus on the rhetorical strategies used to *interesse* actors into networks for the support of an agenda during creation of submissions and the meeting negotiations.

Time was clearly a factor in the MEPC, but tracing its effects to identify it as an actor was difficult. Future research should explore if and how time affects discussions, agreements and compromise and indeed how time is a regulatory construct, practised in a specific way by the Organization. During the fieldwork, it was noted that Delegates were beginning to question whether four days was sufficient for complex environmental regulatory discussions.

The final limitation of this thesis was imposed on it by the theory chosen. ANT has been noted for its lack of critique (Whittle & Spicer 2008) and although ANT studies provide rich and detailed explanations, open black boxes, appreciate novel agentive qualities, and consider the construction of control, they do not tend to produce policy recommendations. ANT is about understanding rather than improving. As such, although this thesis produces an account of attempts to regulate emissions at sea and a deeper empirical understanding of the process, it does not suggest alterations, improvements or additions. When conducting fieldwork, most practitioners were keen to engage with the research and were open to insights about their work. Future research could aim for a more collaborative, active participation approach and engagement with practitioners. Considering that ANT is often seen as partly methodological (Brown & Capdevila 1999; Rydin 2012; Dalsgaard 2013) and partly terminological (Callon 1986a), new approaches to the study of organisations could apply ANT in conjunction with another theory in a companioned approach. Recent work suggests that while ANT offers the capacity to explore taken for granted issues by identifying and opening black boxes, if combined with Interventionist Research, scholars would gain a deeper level of understanding of organizational processes and produce outputs which would be more engaging for practitioners (Lukka & Vinnari 2017).

Although this section has explained the limitations of this work and positioned them as future research opportunities there are even more areas in need of exploration. The next section will outline these before the concluding thoughts are presented.

8.7 Future Research Opportunities

The shipping industry offers a unique and currently under-researched area that warrants further enquiry. As noted above, future work could build on this study by following regulation from inception to adoption, unpacking the network that uses the device for control and increasing understanding of the creation of the impactful submissions. In addition, there are other possible avenues to contribute to our understanding of shipping and regulatory issues. This section lays out future research opportunities and categorizes these by various themes: interest representation; market complexities and calculative schemes; inhumanities at sea, and geographical controversies.

8.7.1 Capturing and Representing Interests

The issue of representation developed during data analysis with reference to the variability in the membership, constitution, authority and size of Delegations at the IMO. Industry experts sit on Member State delegations as consulting experts while there are also Industry Associations present and able to contribute to the discussions in the CO Delegations. Additionally, during data collection some participants voiced issues of inconsistent representation of countries' interests across different international fora and noted lobbying is a continued issue in this area (InfluenceMap 2017). There is an opportunity to treat Delegations themselves as networks and to unpack the responsibility and practice of representation, applying the growing field of *political CSR* to identify regulatory stakeholders and understand how their interests are captured and represented by Delegates (Scherer & Palazzo 2011; Whelan 2012; Néron 2016; Scherer et al. 2016).

As discussed in Chapter 3, an offshoot of ANT literature is the work of market studies (Callon 1998a; Knorr Cetina & Bruegger 2002; Callon et al. 2007; Helgesson & Kjellberg 2013; MacKenzie 2009a). Based on the translations followed in Chapter 6, future work in the IMO could frame the meeting as a market itself in which the delegates and delegations trade in support and compromise. This would allow a greater understanding of market-like activity in legal-political spaces.

There is a need to understand the two manifestations of the EU in government-governance organisations. It is both a cohesive bloc and an assemblage of individual actors and it functions in these organisations in this dualistic manner. Some work has been done here (see Gulbrandsen 2013) and yet we must go further. Applying multiplicity (Law & Mol 2011; McDougall et al. 2016; Mol 1999; Law & Mol 2008) as a framing may give insight into the multi-experience of the EU through other international organisations and provide a contemporary explanation of how many states can act, both individually and collectively (Callon & Latour 1981).

Finally, the UK's exit from the EU, planned for March 2019, and the withdrawal of the U.S. from the Paris Agreement, initiated in June 2017, provide an opportunity to study how Member States adapt and reconfigure their positions and rhetoric in the wake of political, environmental and economic developments.

8.7.2 Market Complexities and Calculative Schemes

International shipping and the production and reduction of emissions is characterized by complexity (Smith et al. 2014). Issues of split incentives between owners and operators persist and stall the uptake of environmental technology (Rehmatulla & Smith 2015a). The dynamics of the Shipping market would benefit from investigation. Not only are cartels part of the mode of operating for Shipping (Sjostrom 2004), Shipping has been undergoing change as a result of the global economic downturn (Barua & Mittal 2017). As a result of these conditions, multiple mergers of shipping companies have occurred since commencement of this research project and it has been estimated that 9 of the top 20 shipping firms will disappear through consolidation by the end of 2018 (World Maritime News 2018). As such, the container market may become disproportioned with a handful of shipping companies moving the majority of world trade. This effect has already been observed in the international fishing industry whereby a very small percentage of the companies are disproportionately responsible for a large percentage of industry activity (Osterblom et al. 2015). These keystone actors dominate and control global production in their sector, and *'influence global governance processes and institutions'* (Osterblom et al. 2015, p11). Identifying keystone actors and their proportions of control is an approach that should be applied to the container shipping

industry in order to provide a contemporary understanding of the network and power dynamics of this sector.

Leading on from understanding the industry's market dynamics and from the known difficulties regulating such an international borderless environment, there is an opportunity to study the creation and implementation of voluntary initiatives in the shipping industry. These are on the rise in the industry and stem from a variety of areas, from in-house company initiatives, company to company partnerships and groups such as the Cleaner Cargo Working Group[92], The Trident Alliance[93] and the Sustainable Shipping Initiative[94] are three such arrangements. Current research focused on these NGO initiatives suggest they are lacking in transparency and rigor (Scott et al. 2017; Poulsen et al. 2018). ANT has been used to unpack the networks that practise similar land-based initiatives (Eden 2009) and the same should undertaken for the sea-based activity, particularly as a way to observe the construction of new networks in real time rather than exploring pre-existing networks.

In addition, NGO initiatives are on the rise (Lister 2015). Examples include projects such as GLOMEEP, a project that aims to support the uptake and implementation of energy efficiency measures in shipping[95], DNVGL's EEDI calculator[96] and BetterFleet[97], an information portal in development to indicate vessel's operational efficiency. Such initiatives often involve the creation and use of calculative and ranking measures. Even the core of current regulations revolved around the construction of ships to meet an Energy Efficiency Design Index. How the shipping industry responds to the calculative schemes in terms of pragmatic environmental initiatives should be a focus for scholars. For example, does the focus on Energy Efficiency (i.e. fuel efficiency) pigeon-hole industry activity towards marginal fuel saving efforts such as hull

[92] https://www.bsr.org/collaboration/groups/clean-cargo-working-group

[93] http://www.tridentalliance.org

[94] http://www.ssi2040.org

[95] http://glomeep.imo.org

[96] https://www.dnvgl.com/maritime/mydnvgl-service-overview/EEDI-calculator.html

[97] http://www.shippingefficiency.org/betterfleet (in beta phase testing at time of writing)

optimization and slow steaming and steer them away from more radical technologies such as Flettner Rotors and fuel cells? While work has considered rating and ranking schemes and the performative behaviours that can ensue from the application of these arrangements (see for example Espeland & Sauder 2007). Similar schemes and calculative devices could be studied in Shipping combining work on ratings and rankings (Shore & Wright 2015; Espeland & Sauder 2007), commensurability of emissions (Callon 2009; MacKenzie 2009; Dalsgaard 2013) and acts of valuation (Ehrenstein & Muniesa 2013; Helgesson & Muniesa 2013; Kjellberg et al. 2013; Muniesa & Helgesson 2013; Vatin 2013). The shipping industry provides unique context in which to explore these themes and a potentially unique opportunity to follow the real-time construction and implementation of governance networks and calculative market devices.

8.7.3 Inhumanity at Sea: Applying ANT to the Plight of Animals

One specific empirical context that requires investigation is live animal exports. Livestock shipping is an under-researched context with issues of animal welfare, pollution and safety (see for example Jiang 2017; Simpson 2017a; Simpson 2017b). The Australian Maritime Safety Authority recently banned livestock carrier *Al Messilah* from operating in the country due to defects found during inspections (Jiang 2017) and on a voyage in 2016, 3000 animals of the 69,322 aboard perished due to conditions aboard this ship (ibid). Research could draw on the work done by Law and Mol to understand the socio-technical experience of animals and how the perception of these animals by different actors can produce and enact multiple realities (Law & Mol 2011; Law & Mol 2008). ANT perspectives are useful here through the foregrounding of animals as non-human actors and may enable exploration of their environment aboard the ship from a more symmetrical and open standpoint. Such research could respond to criticisms by some that ANT, though focused on non-humans, has failed to engage with sentient animals as agents for study (Vinnari et al. 2018; Baxter & Chua 2018).The shipping of livestock is a black box that remains an empirical unknown, largely unopened in academic literatures.

8.7.4 Geographical and Jurisdictional Issues: Exploring Controversy

The Artic is often considered a pristine environment and yet the melting of the ice as a result of climate change is opening up the possibility of an arctic shipping route (Borgerson 2008; Emmerson & Lahn 2014; Lister 2015). Although there are ships that currently sail through the Arctic, the melting ice means that there will be less and less need for these ships to have ice-breaking capabilities (Maritime Knowledge Centre 2012). Indeed last August (2017) marked the first time that a tanker was able to sail the Northern Route without the assistance of an Ice-Breaker (McGrath 2017). The Arctic Route is considered advantageous in Shipping as a way to cut journey times (Borgerson 2008). Accordingly, the Arctic route has presented as a way to reduce voyage emissions, though at the same time there is concern about black carbon emissions from ships accelerating ice melt (Azzara 2013). With the increasing accessibility of this route ship traffic levels could escalate and in return the need for regulation increases (Maritime Knowledge Centre 2012). While there has been some work to understand the intersection of Shipping with this environment and the local society (Kürner et al. 2015) this area is likely to grow in contention and would be an effective context in which to contribute to the understanding controversies within ANT literature (Venturini 2009).

Shipping, and indeed the oceans in general, is a context where jurisdiction, responsibilities and 'stakeholdership' is not fully understood or even stabilized. Future work should consider Ports as a physical manifestation of Obligatory Passage Points (Fox 2000; Callon 1986a; Cloatre & Dingwall 2013) and explore their role in control making. This is an opportune time to explore the role of Ports considering their jurisdiction and influence is growing (Molenaar 2006). They now engage in environmental initiatives and incentive schemes (Acciaro et al. 2014; Gibbs et al. 2014). Furthermore, although Ports were traditionally owned by the country in which they are located, there has been an increase of countries buying and owning other countries' ports (Kynge 2017) which is the global equivalent of your neighbour owning and controlling your doorstep and potentially the flow of goods through it. This oddity of international activity and relations needs to be explored. Furthermore, China has been building artificial islands in the South China Sea (Connor 2018), the environmental consequences of which are yet unknown. Clearly such activity demands scholarly

engagement on a number of levels. Scholars need to approach the shipping industry and the oceans from multidisciplinary angles, combining management, international relations, law and sustainability to examine some of the political-environmental-legal developments of the modern oceans. The sea, therefore, is a place where philosophical questions are raised in practical circumstances: a blue frontier for research.

8.8 Concluding Thoughts

This chapter has highlighted the insights and contributions of this thesis, discussed them in relation to current literatures and suggested how they can be useful for future scholars. The thesis set out to examine and explain the MEPC as a network responsible for regulating CO_2 emissions in the shipping industry. Guided by the questions, '*What is the MEPC?'* and *'How does it work?'* the thesis explained the actors and processes that both constitute the MEPC network, and allow the construction of regulation aimed at controlling CO_2 emissions from ships. Applying the fundamental principles of ANT to collect and analyse multiple data types allowed the creation of a detailed and descriptive narrative and through this the thesis presents an ethnography of regulation in the MEPC and an explanation of control. There are four main contributions of this thesis:

1. This thesis extends conceptions of international networked control into a modern environmental context. There are two inter-dependent and symbiotic stages of producing eventual control. This thesis represents an account of the actors and associations that assemble around the first stage: the production of regulation. Furthermore, this thesis added a rich ethnography of regulation and deep examination of the processes of the MEPC. In doing so, this research adds to the scarce literature on the IMO and indeed on regulatory governance of shipping in general.
2. Empirical insight into the work of texts in organisations is offered. The agency of texts in a socio-legal-political environment was detailed (Cooren 2004; Cloatre & Dingwall 2013)(Cooren 2004; Cloatre & Dingwall 2013). Texts provided durability (Latour 1990), stability and were appresentational devices

(Knorr Cetina & Bruegger 2002; Entwistle & Slater 2014). In addition to what texts do and how they act, the limitations of texts were also discussed.

3. The complimentary sociological vocabularies of *translation* (Callon 1986a) and *treason* (Galis & Lee 2013)were used in conjunction to present a full and balanced narrative of the discursive tensions, commonalities and agreements. Using these concepts together showed their applicability for explaining how disparate interests in a durable network can be continually aligned in practice. Rather than breaking apart or pushing divergent actor-groups out of the network entirely, the MEPC grew more aligned as result of *translation* while *treason* was constrained by the agency of organizational principles.
4. After detailing spaces, people, things and processes, this thesis sought to account for the *missing masses* (Latour 1992). Three constructs were identified as producing and produced by the network. These were discussed as a new actor-category and the term and typology of *Meta-actors* is offered to future ANT scholars to account for non-physical actors that have an agency separate to any one actor and yet are also enacted through physical actors. *Meta-actors* also illustrated the link between networked influence and dependency, highlighting that control in ANT is a position of power and vulnerability.

From the contributions this chapter then examined the limitations of the research, casting these as opportunities for future research to build directly on this work and also presented the wider opportunities for scholarly engagement in the shipping industry. This section now concludes with a reflection on the aim of the research and the thesis as an output.

When I set out to study this area I aimed to provide the eventual reader of my thesis with a theorized explanation of the actor-constituents of the MEPC and the processes by which it functions. In doing this, the thesis presents an ethnographic study of network control making and sheds light on a significant context and a world-important lynchpin organisation. My research questions and the application of ANT as a 'theory-method' allowed me to construct a rich account of creating regulatory control.

This thesis offers up empirical originality and theoretical insights, but it has also highlighted the need to look at both international regulatory control and Shipping as a major area for environmental research. In my experience, Shipping is a very complex and under-appreciated industry. Though responsible for large parts of our comfortable, globalised lives, it is often overlooked into invisibility (Mitropoulos 2005; George 2013; Lister 2015). Thus, there remains a paradox between the size and influence of the international shipping industry and its low visibility, not only in society but also in academic communities focused on environmental study. The thesis began with a review of the small amount of qualitative literature dedicated to the regulation and environmental impacts of this industry and now returns to this point. The shipping industry deserves praise and criticism in equal measure but more than anything; it deserves to be acknowledged. The world is 70 per cent ocean (National Oceanic and Atmospheric Administration 2017). The seas are embedded in our history and will be part of our future. It is my hope that scholars begin to cast their eyes out to sea in the future. In the words of Jacques Yves Cousteau:

'The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat.'

Bibliography

Acciaro, M., Ghiara, H. & Cusano, M.I., 2014. Energy management in seaports: A new role for port authorities. *Energy Policy*, 71, pp.4–12.

Adede, A.O., 1977. Amendment Procedures for Conventions with Technical Annexes: The IMCO Experience. *Virginia Journal of International Law*, 17, pp.201–215.

Alcadipani, R. & Hassard, J., 2010. Actor-Network Theory, organizations and critique: towards a politics of organizing. *Organization*, 17(4), pp.419–435.

Alderton, T. & Winchester, N., 2002. Globalisation and de-regulation in the maritime industry. *Marine Policy*, 26(1), pp.35–43.

Alvesson, M. & Ashcraft, K.L., 2012. Interviews. In G. Symon & C. Cassell, eds. *Qualitative Organizational Research : Core Methods and Current Challenges*. Sage Publications, pp. 239–257.

Amsterdamska, O., 1990. Surely You Are Joking , Monsieur Latour! *Science, Technology & Human Values*, 15(4), pp.495–504.

Ančić, I. & Šestan, A., 2015. Influence of the required EEDI reduction factor on the CO2 emission from bulk carriers. *Energy Policy*, 84, pp.107–116.

Anderson, K. & Bows, A., 2012. Executing a Scharnow turn: reconciling shipping emissions with international commitments on climate change. *Carbon Management*, 3(6), pp.615–628.

Arat, L., 2011. Corporate Social Responsibility in Shipping Companies in the Baltic Sea. *The Centre for Maritime Studies, University of Turku*. Available at: http://www.merikotka.fi/julkaisut/CafeCSRraportti_LauraArat.pdf.

Arnould, E.J. & Wallendorf, M., 1994. Market-Oriented Ethnography: Interpretation Building and Marketing Strategy Formulation. *Journal of Marketing Research*, 31(4), p.484.

Asdal, K., Brenna, B. & Moser, I., 2007. *Technoscience: The politics of interventions*, Oslo Academic Press, Unipub Norway.

Atkinson, P. & Coffey, A., 1997. Analysing Documentary Realities. In D. Silverman, ed. *Qualitative Research: Theory, Method and Practice*. London: Sage Publications, pp. 45–62.

Attah, E.E. & Bucknall, R., 2015. An analysis of the energy efficiency of LNG ships powering options using the EEDI. *Ocean Engineering*, 110(Part B), pp.1–13.

Azzara, A., 2013. Arctic sea shipping: Emissions matter more than you might think. *International Council on Clean Transportation*, (October). Available at: https://www.theicct.org/blog/staff/arctic-sea-shipping-emissions-matter-more-you-might-think [Accessed May 8, 2018].

Bailey, D. & Solomon, G., 2004. Pollution prevention at ports: clearing the air. *Environmental Impact Assessment Review*, 24(7–8), pp.749–774.

Barua, A. & Mittal, A., 2017. Shipping: Sailing into troubled waters. In I. Kalish & A. Rao, eds. *Global Economic Outlook: 1st Quarter 2017*. Deloitte University Press, pp. 56–67.

Baxter, J. & Chua, W.F., 2018. Actor-Network Theory and Criticial Accounting Research. In R. Roslender, ed. *The Routledge Companion to Critical Accounting*. Abingdon: Routledge, pp. 442–453.

Bazari, Z., 2016. IMO Train the Trainer (TTT) Course on Energy Efficient Ship Operation. Module 2 – Ship Energy Efficiency Regulations and Related Guidelines. *International Maritime Organization*, (January), pp.1–45. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Air pollution/M2 EE regulations and guidelines final.pdf.

Bazari, Z. & Longva, T., 2011. Assessment of IMO Mandated Energy Efficiency Measures for International Shipping. , (October), p.34. Available at: http://www.imo.org/en/MediaCentre/HotTopics/GHG/Documents/REPORT ASSESSMENT OF IMO MANDATED ENERGY EFFICIENCY MEASURES FOR INTERNATIONAL SHIPPING.pdf.

Becker, H., 1986. *Writing for Social Scientists: How to Start and Finish Your Thesis, Book or Article*, Chicago: University of Chicago Press.

Bloor, M. et al., 2013. Room for Manoeuvre? Regulatory Compliance in the Global Shipping Industry. *Social and Legal Studies*, 22(2), pp.171–189.

Bloor, M., Thomas, M. & Lane, T., 2000. Health risks in the global shipping industry: An overview. *Health, Risk & Society*, 2(3), pp.329–340.

Boelens, L., 2010. Theorizing Practice and Practising Theory: Outlines for an Actor-Relational-Approach in Planning. *Planning Theory*, 9(1), pp.28–62.

Bomin, 2015. Heavy Fuel Oil (HFO). Available at: https://www.bomin.com/en/news-info/glossary/details/term/heavy-fuel-oil-hfo.html [Accessed June 8, 2018].

Borgerson, S.G., 2008. Arctic meltdown. *Foreign Affairs*, 87(2), pp.63–77.

Briers, M. & Chua, W., 2001. The role of actor-networks and boundary objects in management accounting change: a field study of an implementation of activity-

based costing. *Accounting, Organizations and Society*, 26(3), pp.237–269.

Brown, S.D. & Capdevila, R., 1999. Perpetuum mobile: substance , force and the sociology of translation. In J. Law & J. Hassard, eds. *Actor Network Theory and After*. Blackwell Publishers, pp. 26–50.

Bryman, A., 2012. *Social Research Methods* 4th ed., Oxford University Press.

Bryman, A. & Bell, E., 2007. *Business Research Methods* 2nd ed., Oxford University Press.

Buchanan, D., Boddy, D. & McCalman, J., 1988. Getting in, getting on, getting out and getting back. In A. Bryman, ed. *Doing Research in Organisations*. London: Routledge, pp. 53–67.

Burawoy, M., 1998. The Extended Case Method. *Sociological Theory*, 16(1).

Burgess, R.G., 1984. *In The Field: An Introduction to Field Research*, London: Routledge.

Burleson, E., 2016. *Paris Agreement and Consensus to Address Climate Challenge*, Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2710076.

Buzan, B., 1981. Negotiating by Consensus: Developments in Technique at the United Nations Conference on the Law of the Sea. *The American Journal of International Law*, 75(2), pp.324–348.

Callon, M., 1999. Actor-network theory — the market test. *The Sociological Review*, 47(S1), pp.181–195.

Callon, M., 2009. Civilizing markets: Carbon trading between in vitro and in vivo experiments. *Accounting, Organizations and Society*, 34(3–4), pp.535–548.

Callon, M., 1995. Four Models for the Dynamics of Science. In S. Jasanoff et al., eds. *Handbook of Science and Technology Studies*. London, New Delhi: Sage Publications, pp. 29–63.

Callon, M., 1986a. Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay [Online Downloaded Version] J. Law, ed. *Power, Action and Belief: New Sociology of Knowledge?*, pp.196–223. Available at: http://www.thetransformationproject.co.uk/wp-content/uploads/Actor-Network-Theory.pdf [Accessed June 10, 2018].

Callon, M., 1991. Techno-Economic Networks and Irreversibility. In J. Law, ed. *A Sociology of Monsters? Essays on Power, Technology and Domination, Sociological Review Monograph*. London: Routledge, pp. 132–161.

Callon, M., 1998. *The Laws of the Markets*, Oxford: Blackwell Publishers.

Callon, M., 1986b. The Sociology of an Actor-Network: The Case of the Electric Vehicle. In M. Callon, J. Law, & A. Rip, eds. *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World*. London: MacMillan Press, pp. 19–34.

Callon, M., 1980. The State and Technical Innovation: A Case Study of the Electric Vehicle in France. *Reseach Policy*, 9, pp.358–376.

Callon, M., 2007. What Does It Mean to Say That Economics is Performative. In D. MacKenzie, F. Muniesa, & L. Siu, eds. *Do Economists Make Markets? On the Performativity of Economics*. Princeton University Press, pp. 311–357.

Callon, M. & Latour, B., 1992. Don't Throw the Baby Out with the Bath School! A Reply to Collins and Yearley. In A. Pickering, ed. *Science as practice and culture*. Chicago: The University of Chicago Press, pp. 343–368.

Callon, M. & Latour, B., 1981. Unscrewing the big Leviathan : How Actors Macro-Structure Reality and How Sociologists Help Them To Do So. In K. Knorr-Cetina & A. V. Cicourel, eds. *Advances in Social Theory and Methodology: Toward and Integration of Micro- and Macro-Sociologies*. Boston: Routledge, pp. 277–303.

Callon, M. & Law, J., 1982. On Interests and Their Transformation: Enrolment and Counter-Enrolment. *Social Studies of Science*, 12, pp.615–625.

Callon, M., Millo, Y. & Muniesa, F., 2007. *Market Devices* M. Callon, Y. Millo, & F. Muniesa, eds., Blackwell Publishing.

Cames, M. et al., 2015. *Emission Reduction Targets for International Aviation and Shipping*, Available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU(2015)569964_EN.pdf.

Campbell, L.M., Corson, C., et al., 2014. Studying Global Environmental Meetings to Understand Global Environmental Governance: Collaborative Event Ethnography at the Tenth Conference of the Parties to the Convention on Biological Diversity. *Global Environmental Politics*, 14(3), pp.1–20.

Campbell, L.M., Hagerman, S. & Gray, N.J., 2014. Producing Targets for Conservation: Science and Politics at the Tenth Conference of the Parties to the Convention on Biological Diversity. *Global Environmental Politics*, 14(3), pp.41–63.

Chen, L., Yip, T.L. & Mou, J., 2017. Provision of Emission Control Area and the impact on shipping route choice and ship emissions. *Transportation Research Part D: Transport and Environment*, 58, pp.280–291. Available at: https://doi.org/10.1016/j.trd.2017.07.003.

Cheng, T.C.E. & Choy, P.W.C., 2007. Measuring Success Factors of Quality

Management in the Shipping Industry. *Maritime Economics & Logistics*, 9(3), pp.234–253.

Class NK, 2018. Topics at IMO. *2018*. Available at: http://www.classnk.or.jp/hp/en/info_service/imo_and_iacs/topics_imo.html [Accessed May 9, 2018].

Cloatre, E. & Dingwall, R., 2013. "Embedded regulation:" The migration of objects, scripts, and governance. *Regulation and Governance*, 7(3), pp.365–386.

Coady, L. & Lister, J., 2013. The Role of Corporate Social Responsibility (CSR) in the International Shipping Sector. *The Northern European Symposium on CSR in Shipping*, (November).

Coady, L. & Strandberg, C., 2012. Corporate Social Responsibility and the Shipping Industry: A Global Perspective. *A Seminar on CSR Activities for the Shipping Industry*, (April). Available at: http://www.ncbi.nlm.nih.gov/pubmed/24760730.

Coffey, A. & Atkinson, P., 1996. *Making Sense of Qualitative Data: Complementary Research Strategies*, Thousand Oaks, CA: Sage.

Collins, H.M. & Yearley, S., 1992. Epistemological Chicken. In A. Pickering, ed. *Science as practice and culture*. Chicago and London: The University of Chicago Press, pp. 301–326.

Connor, N., 2018. China triggers new storm over military build-up on artificial islands. *The Telegraph*. Available at: http://www.telegraph.co.uk/news/2018/01/09/diplomatic-protests-china-shows-militarised-artificial-islands/.

Cooren, F., 2004. Textual Agency: How Texts Do Things in Organizational Settings. *Organization*, 11(3), pp.373–393.

Copland, F. et al., 2015. *Linguistic Ethnography: Collecting, Analysing and Presenting Data*, Sage Publications.

Corbett, J.J. et al., 2016. Health Impacts Associated with Delay of MARPOL Global Sulphur Standards. *Submitted by Finland at MEPC69*, (MEPC 69/INF 34).

Corbett, J.J. et al., 2008. Mortality from Ship Emissions : A Global Assessment Mortality from Ship Emissions : A Global Assessment. *Environmental Science & Technology*, 41(January), pp.8512–8518.

Corkhill, M., 2017. Global LNG fleet hits 500 vessels. *LNG World Shipping*. Available at: http://www.lngworldshipping.com/news/view,global-lng-fleet-hits-500-vessels_48030.htm [Accessed May 28, 2018].

Corson, C., Campbell, L.M. & MacDonald, K.I., 2014. Capturing the Personal in

Politics: Ethnographies of Global Environmental Governance. *Global Environmental Politics*, 14(3), pp.21–40.

Cowan, D. & Carr, H., 2008. Actor-network Theory, Implementation, and the Private Landlord. *Journal of Law and Society*, 35(1), pp.149–166.

Cressman, D., 2009. *A Brief Overview of Actor-Network Theory: Punctualization, Heterogenous Engineering & Translation*,

Crotty, M., 1998. *The Foundations of Social Research: Meaning and Perspective in the Research Process*, Sage.

Cullinane, K. & Cullinane, S., 2013. Atmospheric Emissions from Shipping: The Need for Regulation and Approaches to Compliance. *Transport Reviews*, 33(4), pp.377–401.

Czarniawska, B. & Sevón, G., 1996. Introduction. In B. Czaniawska & G. Sevón, eds. *Translating Organizational Change*. de Gruyter, pp. 1–12.

Dake, S., 2011. QUEENS Of Bermuda As Cunard Line Switches Registry. *Maritime Matters*. Available at: http://maritimematters.com/2011/10/queens-of-bermuda-as-cunard-line-switches-registry/ [Accessed March 3, 2014].

Dalsgaard, S., 2013. The commensurability of carbon Making value and money of climate change. *Journal of Ethnographic Theory*, 3(1), pp.80–98.

DeSombre, E., 2006. *Flagging Standards: Globalization and Environmental, Safety, and Labor Regulations at Sea*, MIT Press.

Det Norske Veritas, 2004. Technical Report: Corporate Social Responsibility and the Shipping Industry. Available at: http://www.he-alert.org/filemanager/root/site_assets/standalone_pdfs_0355-/he00375.pdf.

Deutsche Flagge, 2018. Laid Up Ships. *Federal Ministry of Transport and Digital Infrastructure*. Available at: https://www.deutsche-flagge.de/en/crew/ships-manning/laid-up-ships [Accessed May 8, 2018].

Devanney, J., 2010. EEDI, a Case Study in Indirect Regulation of CO2 Pollution. *Center for Tankship Excellence*. Available at: http://www.c4tx.org/ctx/pub/eedi.pdf.

Devanney, J., 2011. The impact of the energy efficiency design index on very large crude carrier design and CO 2 emissions. *Ships and Offshore Structures*, 6(4), pp.355–368.

DNV GL, 2017. EU MRV Regulation. Available at: https://www.dnvgl.com/maritime/eu-mrv-regulation/faq.html [Accessed January 19, 2018].

Draffin, N., 2014. *Shipping: An Introduction to the Technical, Operational and Commercial Aspects* 1st ed., Oxfordshire: Petrospot Limited.

Eden, S., 2009. The work of environmental governance networks: Traceability, credibility and certification by the Forest Stewardship Council. *Geoforum*, 40(3), pp.383–394.

Egan, M., 2014. Making water count: water accountability change within an Australian university. *Accounting, Auditing & Accountability Journal*, 27(2), pp.259–282.

Ehrenstein, V. & Muniesa, F., 2013. The Conditional Sink: Counterfactual Display in the Valuation of a Carbon Offsetting Reforestation Project. *Valuation Studies*, 1(2), pp.161–188.

Emmerson, C. & Lahn, G., 2014. Arctic Opening: Opportunity and Risk in the High North. *Lloyd's*.

Entwistle, J. & Slater, D., 2014. Reassembling the Cultural. *Journal of Cultural Economy*, 7(2), pp.161–177.

Espeland, W. & Sauder, M., 2007. Rankings and Reactivity - How Public Measures Recreate Social Worlds. *American Journal of Sociology*, 113(1), pp.1–40.

European Commission, 2016. The EU Emissions Trading System (EU ETS). *European Commission-Climate Action*, (September). Available at: https://ec.europa.eu/clima/sites/clima/files/factsheet_ets_en.pdf.

Eyring, V., Köhler, H.W., Van Aardenne, J., et al., 2005. Emissions from international shipping: 1. The last 50 years. *Journal of Geophysical Research D: Atmospheres*, 110(17), pp.171–182.

Eyring, V., Köhler, H.W., Lauer, A., et al., 2005. Emissions from international shipping: 2. Impact of future technologies on scenarios until 2050. *Journal of Geophysical Research D: Atmospheres*, 110(17), pp.183–200.

Eyring, V. et al., 2010. Transport impacts on atmosphere and climate: Shipping. *Atmospheric Environment*, 44(37), pp.4735–4771.

Fafaliou, I., Lekakou, M. & Theotokas, I., 2006. Is the European shipping industry aware of corporate social responsibility? The case of the Greek-owned short sea shipping companies. *Marine Policy*, 30(4), pp.412–419.

Fairplay, 2012a. Cracks Emerge in Green Argument. *Fairplay.co.uk*.

Fairplay, 2012b. Shipping SOS on Social Responsibility. *Fairplay.co.uk*.

Faulkner, a., 2012. Law's performativities: Shaping the emergence of regenerative medicine through European Union legislation. *Social Studies of Science*, 42(5),

pp.753–774.

Fauré, B. et al., 2010. The calculation of business, or the business of calculation? Accounting as organizing through everyday communication. *Human Relations*, 63(8), pp.1249–1273.

Fedi, L., 2017. The Monitoring, Reporting and Verification of Ships' Carbon Dioxide Emissions: A European Substantial Policy Measure towards Accurate and Transparent Carbon Dioxide Quantification. *Ocean Yearbook Online*, 31(1), pp.381–417.

Fenwick, T. & Edwards, R., 2010. *Actor-Network Theory in Education*, New York: Routledge.

Fetterman, D.M., 2010. *Ethnography: Step-by-Step* 3rd ed., Sage Publications.

Fox, S., 2005. An actor-network critique of community in higher education: Implications for networked learning. *Studies in Higher Education*, 30(1), pp.95–110.

Fox, S., 2000. Communities of Practice, Foucault and Actor-Network Theory. *Journal of Management Studies*, 37(6).

Fujimura, J.H., 1992. Crafting Science: Standardized Packages, Boundary Objects, and "Translation." In A. Pickering, ed. *Science as Practice and Culture*. Chicago: The University of Chicago Press, pp. 168–211.

Fulcher, J. & Scott, J., 2011. *Sociology* 4th ed., Oxford: Oxford University Press.

Galis, V. & Lee, F., 2013. A Sociology of Treason: The Construction of Weakness. *Science, Technology & Human Values*, 39(1), pp.154–179.

Garcia-Parpet, M.-F., 2007. The Social Construction of a Perfect Market: The Strawberry Auction at Fontaines-en-Sologne. In D. MacKenzie, F. Muniesa, & L. Siu, eds. *Do Economists Make Markets? On the Performativity of Economics*. Princeton University Press, pp. 20–53.

Geertz, C., 1973. *The Interpretation of Cultures*, New York: Basic Books Inc.

George, R., 2013. *Deep Sea and Foreign Going: Inside Shipping, the Invisible Industry That Brings You 90% of Everything*, Portobello Books Ltd.

Gherardi, S. & Perrotta, M., 2011. Egg dates sperm: a tale of a practice change and its stabilization. *Organization*, 18(5), pp.595–614.

Gianni, M. & Simpson, W., 2005. *How flags of convenience provide cover for illegal, unreported and unregulated fishing*, Available at: http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/iuu/iuu_flags_of

_convenience.pdf.

Gibbs, D. et al., 2014. The role of sea ports in end-to-end maritime transport chain emissions. *Energy Policy*, 64, pp.337–348.

Giziakis, C. & Christodoulou, A., 2012. Environmental awareness and practice concerning maritime air emissions: the case of the Greek shipping industry. *Maritime Policy and Management*, 39(3), pp.353–368.

Gray, N.J., Gruby, R.L. & Campbell, L.M., 2014. Boundary Objects and Global Consensus: Scalar Narratives of Marine Conservation in the Convention on Biological Diversity. *Global Environmental Politics*, 14(3), pp.64–83.

Gulbrandsen, C., 2013. Navigating from Conflict to Working Arrangement: EU Coordination in the International Maritime Organization. *Journal of European Integration*, 35(7), pp.749–765.

Hackmann, B., 2012. Analysis of the governance architecture to regulate GHG emissions from international shipping. *International Environmental Agreements: Politics, Law and Economics*, 12(1), pp.85–103.

Hargett, T.R. & Williams, M.F., 2009. Wilh. Wilhelmsen Shipping Company: moving from CSR tradition to CSR leadership. *Corporate Governance*, 9(1), pp.73–82.

Harman, G., 2009. *Prince of Networks: Bruno Latour and Metaphysics* Open Acces., Melbourne: re.press. Available at: http://www.re-press.org/book-files/OA_Version_780980544060_Prince_of_Networks.pdf.

Harman, G., 2007. The Importance of Bruno Latour for Philosophy. *Cultural Studies Review*, 13(1), pp.31–49.

Harrison, D., 2014. Using Multiple Market Devices-in-the-Making in Environmental Market Construction. In *3rd Interdisciplinary Market Studies Workshop*. pp. 1–23.

Harrould-Kolieb, E., 2008. Shipping Impacts on Climate: a Source with Solutions. *Oceana*, (July).

Hayes, T. & Mattimoe, R., 2004. To Tape or Not to Tape: Reflections on Methods of Data Collection. In C. Humphrey & B. Lee, eds. *The Real Life Guide to Accounting Research: A Behind the Scenes View of Using Qualitative Research Methods*. Elsevier Ltd, pp. 359–372.

Helgesson, C.-F. & Kjellberg, H., 2013. Introduction: Values and Valuations in Market Practice. *Journal of Cultural Economy*, 6(4), pp.361–369.

Helgesson, C.-F. & Muniesa, F., 2013. For What It's Worth: An Introduction to Valuation Studies. *Valuation Studies*, 1(1), pp.1–10.

Hughes, E., 2016. Recent developments at IMO to address GHG emissions from ships. *Marine Envrionment Division, IMO*, (Side Event COP 22-November). Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/UN Joint side event presentation.pdf.

ICAO, 2018. About ICAO. Available at: https://www.icao.int/about-icao/Pages/default.aspx [Accessed January 8, 2018].

IMERS, 2016. CBDR at MEPC 65: Resolution adopted. *International Maritime Emission Reduction Scheme*. Available at: http://www.imers.org/mepc65 [Accessed April 18, 2018].

IMO, 2017a. Adopting a convention, Entry into force, Accession, Amendment, Enforcement, Tacit acceptance procedure. Available at: http://www.imo.org/en/About/Conventions/Pages/Home.aspx [Accessed January 7, 2018].

IMO, 2018a. Attending IMO Meetings: Terms and Conditions. *Media Centre*. Available at: http://www.imo.org/en/MediaCentre/IMOMediaAccreditation/Pages/TermsAndConditions.aspx [Accessed May 5, 2018].

IMO, 2010. *Basic Documents Volume 1: 2010 Edition*,

IMO, 2017b. Brief History of IMO. Available at: http://www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx [Accessed January 3, 2018].

IMO, 2018b. Energy Efficiency Measures. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Technical-and-Operational-Measures.aspx [Accessed May 30, 2018].

IMO, 2018c. Historic Background. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Historic-Background-.aspx [Accessed June 5, 2018].

IMO, 2018d. IMO: The 2020 Global Sulphur Limit. , pp.1–4. Available at: http://www.imo.org/en/MediaCentre/HotTopics/GHG/Documents/FAQ_2020_English.pdf [Accessed February 2, 2018].

IMO, IMO Frequently Asked Questions: Implementing the Ballast Water Management Convention. Available at: http://www.imo.org/en/MediaCentre/HotTopics/Documents/FAQ - Implementing the Ballast Water Management Convention.pdf [Accessed May 2, 2018].

IMO, 2017c. IMO Member State Audit Scheme. Available at:

http://www.imo.org/en/OurWork/MSAS/Pages/AuditScheme.aspx [Accessed January 6, 2018].

IMO, 2018e. International Convention for the Prevention of Pollution from Ships (MARPOL). Available at: http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx [Accessed February 2, 2018].

IMO, 2017d. Introduction to IMO. Available at: http://www.imo.org/en/About/Pages/Default.aspx [Accessed January 3, 2018].

IMO, 2018f. Low carbon shipping and air pollution control. Available at: http://www.imo.org/en/MediaCentre/hottopics/ghg/pages/default.aspx [Accessed February 11, 2018].

IMO, 2018g. Market-Based Measures. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Market-Based-Measures.aspx [Accessed April 18, 2018].

IMO, 2017e. Member State Audit Scheme & Implementation Support. Available at: http://www.imo.org/en/OurWork/MSAS/Pages/default.aspx [Accessed January 6, 2018].

IMO, 2018h. Member States, IGOs and NGOs. Available at: http://www.imo.org/en/About/Membership/Pages/Default.aspx [Accessed June 16, 2018].

IMO, 2017f. Member States, IGOs and NGOs. Available at: http://www.imo.org/en/About/Membership/Pages/Default.aspx [Accessed January 6, 2017].

IMO, 2018i. Prevention of Air Pollution From Ships. Available at: http://www.imo.org/en/OurWork/environment/pollutionprevention/airpollution/pages/air-pollution.aspx [Accessed February 2, 2018].

IMO, 2018j. Status of Treaties. Available at: http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/StatusOfTreaties.pdf [Accessed February 8, 2018].

IMO, 2017g. Structure of IMO. Available at: http://www.imo.org/en/About/Pages/Structure.aspx [Accessed January 3, 2018].

IMO, 2018k. Sulphur 2020 – cutting sulphur oxide emissions. Available at: http://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx [Accessed January 8, 2018].

IMO, 2018l. Sulphur oxides (SOx) and Particulate Matter (PM) - Regulation 14. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Sulphur-oxides-(SOx)-–-Regulation-14.aspx [Accessed June 5, 2018].

IMO, 2018m. Technical Cooperation Committee (TC). Available at: http://www.imo.org/en/MediaCentre/MeetingSummaries/TC/Pages/Default.aspx [Accessed May 9, 2018].

InfluenceMap, 2017. *Corporate capture of the International Maritime Organization: How the shipping sector lobbies to stay out of the Paris Agreement*, London.

International Chamber of Shipping, 2014. Shipping, World Trade and the Reduction of C02 Emissions. , p.6.

International Maritime Organisation, 2010. Reduction of GHG Emissions from Ships: Full report of the work undertaken by the Expert Group on Feasibility Study and Impact Assessment of possible Market-based Measures. Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/INF-2.pdf.

International Monetary Fund, 2018. World Economic Outlook: Gross Domestic Product. *IMF DataMapper*, (April). Available at: http://www.imf.org/external/datamapper/NGDPD@WEO/WEOWORLD [Accessed June 8, 2018].

IRCLASS Indian Register of Shipping, 2018. Implementing Energy Efficiency Design Index (EEDI). Available at: http://www.irclass.org/media/1393/energy-efficiency-design-index.pdf [Accessed February 11, 2018].

Irvine, A., Drew, P. & Sainsbury, R.D., 2012. Am I not answering your questions properly? Clarification, adequacy and responsiveness in semi-structured telephone and face-to-face interviews. *Qualitative Research*, 13, pp.87–106. Available at: http://dx.doi.org/10.1177/1468794112439086.

Jiang, J., 2017. Australia bans controversial Al Messilah livestock carrier. *Splash247*. Available at: http://splash247.com/australia-bans-controversial-al-messilah-livestock-carrier/ [Accessed March 3, 2018].

Jóhannesson, G.T., 2005. Tourism translations: Actor-Network Theory and tourism research. *Tourist Studies*, 5(2), pp.133–150.

Johnson, H. et al., 2013. Will the ship energy efficiency management plan reduce CO2emissions? A comparison with ISO 50001 and the ISM code. *Maritime Policy and Management*, 40(2), pp.177–190.

Johnson, J., 1988. Mixing Humans and Nonhumans Together: The Sociology of a Door-

Closer. *Social Problems*, 35(3), pp.298–310.

Jollands, S., Akroyd, C. & Sawabe, N., 2015. Core values as a management control in the construction of "sustainable development." *Qualitative Research in Accounting & Management*, 12(2), pp.127–152.

Jollands, S. & Quinn, M., 2017. Politicising the sustaining of water supply in Ireland – the role of accounting concepts. *Accounting, Auditing & Accountability Journal*, 30(1), pp.164–190.

Justesen, L. & Mouritsen, J., 2011. Effects of actor-network theory in accounting research. *Accounting, Auditing & Accountability Journal*, 24(2), pp.161–193.

Kågeson, P., 2007. *Linking CO2 Emissions from International Shipping to the EU ETS*, Available at: http://www.natureassociates.se/pdf/nya/CO2 shipping final.pdf.

Karim, M.S., 2015. *Prevention of pollution of the marine environment from vessels: The Potential and Limits of the International Maritime Organisation*, Queensland: Springer International.

Kedzierski, A., 2013. IMO opens the door to reduce shipping emissions Contact the press team Share. *Transport & Environment*. Available at: https://www.transportenvironment.org/press/imo-opens-door-reduce-shipping-emissions [Accessed April 18, 2018].

Kirrane, B., 2018. Emission Control Areas and Low Sulphur Fuel. *Safety4Sea*. Available at: https://safety4sea.com/emission-control-areas-and-low-sulphur-fuel/ [Accessed January 8, 2018].

Kjellberg, H. et al., 2013. Valuation Studies ? Our Collective Two Cents. , 1(1), pp.11–30.

Knorr Cetina, K. & Bruegger, U., 2002. Traders' Engagement with Markets: A Postsocial Relationship. *Theory, Culture & Society*, 19(5–6), pp.161–185.

Kopela, S., 2014. Climate Change, Regime Interaction, and the Principle of Common but Differentiated Responsibility: The Experience of the International Maritime Organization. *Yearbook of International Environmental Law*, 24(1), pp.70–101.

Kremlis, M., 2010. The Inclusion of the Shipping Industry in the EU ETS. *European Energy and Environmental Law Review*, 19(3), pp.145–156.

Kürner, F. et al., 2015. Combining Actor-Network Theory and the Concept of Ecosystem Services to Assess the Development of Arctic Shipping Routes. *International Journal of Actor-Network Theory and Technological Innovation*, 7(2), pp.1–18.

Kynge, J., 2017. Chinese purchases of overseas ports top $20bn in past year. *Financial*

Times.

Langewiesche, W., 2004. *The Outlaw Sea: A World of Freedom, Chaos and Crime*, North Point Press.

Larkin, A., Smith, T. & Wrobel, P., 2017. Shipping in changing climates. *Marine Policy*, 75, pp.188–190.

Latour, B., 1983. Give Me a Laboratory and I will Raise the World. In K. Knorr-Cetina & M. Mulkay, eds. *Science Observed: Perspectives on the Social Study of Science*. Sage Publications.

Latour, B., 1996. On Actor-Network Theory. A Few Clarifications Plus More Than a Few Complications. *Soziale Welt*, 47, pp.369–381.

Latour, B., 1999a. On Recalling ANT. In J. Law & J. Hassard, eds. *Actor Network Theory and After*. Blackwell Publishers, pp. 15–25.

Latour, B., 1994. On Technical Mediation - Philosophy, Sociology, Genealogy. *Common Knowledge*, 3, pp.29–64.

Latour, B., 1999b. *Pandora's hope: Essays on the reality of science studies*, Cambridge, MA: Harvard University Press.

Latour, B., 2004a. *Politics of Nature: How to Bring the Sciences into Democracy* Translated., Cambridge, MA and London: Harvard University Press.

Latour, B., 2005. *Reassembling the Social*, Oxford University Press.

Latour, B., 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*, Cambridge: Harvard University Press.

Latour, B., 1990. Technology is society made durable. *The Sociological Review*, 38(S1), pp.103–131.

Latour, B., 1988. *The Pasteurization of France* Translated., Cambridge, MA and London: Harvard University Press.

Latour, B., 1986. The Powers of Association. In J. Law, ed. *Power, Action and Belief. A New Sociology of Knowledge?*. London: Routledge, pp. 261–277.

Latour, B., 1992. Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker & J. Law, eds. *Shaping Technology-Building Society: Studies in Sociotechnical Change*. MIT Press, pp. 225–258.

Latour, B., 2004b. Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry*, 30(2), pp.225–248.

Latour, B. & Woolgar, S., 1986. *Laboratory Life: The Construction of Scientific Facts*

2nd ed., Princeton, New Jersey: Princeton University Press.

Latour, B. & Woolgar, S., 1979. *Laboratory Life: The Social Construction of Facts*, Princeton University Press.

Law, J., 1991a. *A Sociology of Monsters: Essays on Power Technology and Domination*, London: Routledge.

Law, J., 2007a. *Actor Network Theory and Material Semiotics*, Lancaster.

Law, J., 1999a. After ANT: Complexity, Naming and Topology. In J. Law & J. Hassard, eds. *Actor Network Theory and After*. Blackwell Publishers, pp. 1–14.

Law, J., 2004. *After Method: Mess in Social Science Research*, Routledge.

Law, J., 2007b. Making a mess with method. *Centre for Science Studies*, (March), pp.1–12.

Law, J., 1992. Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity. *Systems Practice*, 5(4), pp.379–393.

Law, J., 1986a. On power and its tactics: a view from the sociology of science. *The Sociological Review*, 34(1), pp.1–38.

Law, J., 1986b. On the Methods of Long Distance Control: Vessels, Navigation, and the Portuguese Route to India. In J. Law, ed. *Power, Action and Belief: A New Sociology of Knowledge?*. Routledge, pp. 234–263.

Law, J., 1991b. Power, Discretion and Strategy. In *A Sociology of Monsters? Essays on Power, Technology and Domination, Sociological Review Monograph*. pp. 165–191.

Law, J., 2003. Topology and the Naming of Complexity. *Centre for Science Studies*, pp.1–10.

Law, J., 1999b. *Traduction / Trahison : Notes on ANT*, Lancaster.

Law, J. & Callon, M., 1992. The Life and Death of an Aircraft: A Network Analysis of Technical Change. In W. E. Bijker & J. Law, eds. *Shaping Technology/Building Society: Studies in Sociotechnical Change*. MIT Press, pp. 21–52.

Law, J. & Mol, A., 2008. The Actor-Enacted: Cumbrian Sheep in 2001. In C. Knappett & L. Malafouris, eds. *Material Agency: Towards a Non-Anthropocentric Approach*. Springer Science + Business Media LLC, pp. 57–77.

Law, J. & Mol, A., 2011. Veterinary Realities: What is Foot and Mouth Disease? *Sociologia Ruralis*, 51(1), pp.1–16.

Law, J. & Williams, R.J., 1982. Putting Facts Together: A Study of Scientific

Persuasion. *Social Studies of Science*, 12, pp.535–558.

van Leeuwen, J., 2010. *Who Greens The Waves?: Changing Authority in the Environmental Governance of Shipping and Offshore Oil and Gas Production* 2010th ed., Wageningen Academic Publishers.

Levinson, M., 2006. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, New Jersey: Princeton University Press.

Lindstad, H. et al., 2015. Maritime shipping and emissions: A three-layered, damage-based approach. *Ocean Engineering*, 110, pp.94–101.

Lister, J., 2015. Green Shipping: Governing Sustainable Maritime Transport. *Global Policy*, 6(2), pp.118–129.

Lister, J., Poulsen, R.T. & Ponte, S., 2015. Orchestrating transnational environmental governance in maritime shipping. *Global Environmental Change*, 34, pp.185–195.

Lockwood Payton, A., 2010. *Consensus Procedures in International Organizations*, Florence. Available at: http://cadmus.eui.eu/handle/1814/14381.

Lofland, J. et al., 2006. *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis* 4th ed., Cengage Learning.

Longva, T., Eide, M.S. & Skjong, R., 2010. Determining a required energy efficiency design index level for new ships based on a cost effectiveness criterion. *Maritime Policy and Management*, 37(2), pp.129–143.

Lu, C., Lin, C. & Tu, C., 2009. Corporate Social Responsibility and Organisational Performance in Container Shipping. *International Journal of Logistics Research and Applications*, 12(2), pp.119–132.

Lukka, K. & Vinnari, E., 2017. Combining actor-network theory with interventionist research: present state and future potential. *Accounting, Auditing & Accountability Journal*, 30(3), pp.720–753.

Lupton, D., 2012. M-health and health promotion: The digital cyborg and surveillance society. *Social Theory & Health*, 10(3), pp.229–244. Available at: http://link.springer.com/10.1057/sth.2012.6.

Van Maanen, J., 2011. *Tales of the Field: On Writing Ethnography* 2nd ed., The University of Chicago Press.

MacKenzie, D., 2009. Making things the same:Gases, emission rights and the politics of carbon markets. *Accounting, Organizations and Society*, 34, pp.440–455.

Mander, S., 2017. Slow steaming and a new dawn for wind propulsion: A multi-level analysis of two low carbon shipping transitions. *Marine Policy*, 75, pp.210–216.

Maritime Knowledge Centre, 2012. *International Shipping Facts and Figures – Information Resources on Trade , Safety , Security , Environment*, Available at: http://www.imo.org/KnowledgeCentre/ShipsAndShippingFactsAndFigures/TheRoleandImportanceofInternationalShipping/Documents/International Shipping - Facts and Figures.pdf.

Mason, J., 2002. *Qualitative Researching*, Sage Publications.

Matthews, S., 2010. Shipping Sees the Broader Benefits of Acting Responsibly. *Lloyd's List*, p.4.

May, T., 2001. *Social Research: Issues, Methods and Process* 3rd ed., Open University Press.

McDougall, A. et al., 2016. Collaboration and entanglement: An actor-network theory analysis of team-based intraprofessional care for patients with advanced heart failure. *Social Science and Medicine*, 164, pp.108–117.

McGrath, M., 2017. First tanker crosses northern sea route without ice breaker. *BBC News*. Available at: http://www.bbc.com/news/science-environment-41037071 [Accessed March 3, 2018].

McGuirk, P., 2000. Power and Policy Networks in Urban Governance: Local Government and Property-led Regeneration in Dublin. *Urban Studies*, 37(4), pp.651–672.

Miettinen, R., 1999. The riddle of things: Activity theory and actor-network theory as approaches to studying innovations. *Mind, Culture, and Activity*, 6(3), pp.170–195.

Miles, M., Huberman, A.M. & Saldaña, J., 2014. *Qualitative Data Analysis: A Methods Sourcebook* 3rd ed., Sage Publications.

Mitchell, R.B., 1994. *Intentional Oil Pollution at Sea*, Cambridge, MA: MIT Press.

Mitchell, T., 2007. The Properties of Markets. In D. MacKenzie, F. Muniesa, & L. Siu, eds. *Do Economists Make Markets? On the Performativity of Economics*. Princeton University Press, pp. 244–275.

Mitropoulos, E., 2005. Seatrade London The image of the industry International shipping: carrier of world trade. In London, pp. 3–5.

Mol, A., 2010. Actor-Network Theory: sensitive terms and enduring tensions. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 50, pp.253–269.

Mol, A., 1999. Ontological Politics. A Word and Some Questions. *Sociological Review*, 46(S), pp.74–89.

Molenaar, E.J., 2006. Port State Jurisdiction: Towards Mandatory and Comprehensive

Use. *The Law of the Sea: Progress and Prospects*, 8320(June).

Mouritsen, J., Hansen, A. & Hansen, C.Ø., 2009. Short and long translations: Management accounting calculations and innovation management. *Accounting, Organizations and Society*, 34(6–7), pp.738–754.

Muniesa, F. & Helgesson, C.-F., 2013. Valuation Studies and the Spectacle of Valuation. *Valuation Studies*, 1(2), pp.119–123.

National Oceanic and Atmospheric Administration, 2017. How much water is in the ocean? , p.1. Available at: https://oceanservice.noaa.gov/facts/oceanwater.html [Accessed January 28, 2018].

Neef, D., 2012. Corporate social responsibility comes to maritime shipping. *Safety4Sea*. Available at: http://www.safety4sea.com/corporate-social-responsibility-comes-to-maritime-shipping/analysis-6-25.

Neele, F. et al., 2017. CO2Transport by Ship: The Way Forward in Europe. *Energy Procedia*, 114(November 2016), pp.6824–6834.

Néron, P.Y., 2016. Rethinking the Ethics of Corporate Political Activities in a Post-Citizens United Era: Political Equality, Corporate Citizenship, and Market Failures. *Journal of Business Ethics*, 136(4), pp.715–728.

Neyland, D., 2007. Organizational Ethnography. *Organizational Ethnography*, p.190.

Notteboom, T.E. & Vernimmen, B., 2009. The effect of high fuel costs on liner service configuration in container shipping. *Journal of Transport Geography*, 17(5), pp.325–337.

Oberthür, S., 2003. Institutional interaction to address greenhouse gas emissions from international transport: ICAO, IMO and the kyoto protocol. *Climate Policy*, 3(3), pp.191–205.

Osterblom, H. et al., 2015. Transnational corporations as “keystone actors” in marine ecosystems. *PLoS ONE*, 10(5), pp.1–15.

Pauwels, L., 2008. Taking and Using. *Visual Communication Quarterly*, 15(4), pp.243–257.

Pettit, S. et al., 2018. Revisiting history: Can shipping achieve a second socio-technical transition for carbon emissions reduction? *Transportation Research Part D: Transport and Environment*, 58, pp.292–307. Available at: https://doi.org/10.1016/j.trd.2017.05.001.

Pickering, A., 1992. *Science as Practice and Culture* A. Pickering, ed., University of Chicago Press.

Piniella, F., Alcaide, J.I. & Rodríguez-Díaz, E., 2017. The Panama Ship Registry: 1917–2017. *Marine Policy*, 77, pp.13–22.

Pink, S., 2013. *Doing Visual Ethnography* 3rd ed., Sage Publications.

Poulsen, R.T., Hermann, R.R. & Smink, C.K., 2018. Do eco-rating schemes improve the environmental performance of ships? *Marine Policy*, 87(October 2017), pp.94–103.

Poulsen, R.T., Ponte, S. & Lister, J., 2016. Buyer-driven greening? Cargo-owners and environmental upgrading in maritime shipping. *Geoforum*, 68, pp.57–68.

Prosser, J. & Schwartz, D., 2003. Photographs within the Sociological Research Process. In J. Prosser, ed. *Image-based Research: A Sourcebook for Qualitative Researchers*. London: Routledgefalmer, pp. 115–130.

Prout, A., 1996. Actor-network theory, technology and medical sociology: an illustrative analysis of the metered dose inhaler. *Sociology of Health & Illness*, 18(2), pp.198–219.

Rehmatulla, N., Parker, S., et al., 2017. Wind technologies: Opportunities and barriers to a low carbon shipping industry. *Marine Policy*, 75, pp.217–226.

Rehmatulla, N., Calleya, J. & Smith, T., 2017. The implementation of technical energy efficiency and CO2 emission reduction measures in shipping. *Ocean Engineering*, 139(April), pp.184–197.

Rehmatulla, N. & Smith, T., 2015a. Barriers to energy efficiency in shipping: A triangulated approach to investigate the principal agent problem. *Energy Policy*, 84, pp.44–57.

Rehmatulla, N. & Smith, T., 2015b. Barriers to energy efficient and low carbon shipping. *Ocean Engineering*, 110, pp.102–112.

Richards, D., 1996. Elite Interviewing: Approaches and Pitfalls. *Politics*, 16(3), pp.199–204.

Roe, M., 2013. *Maritime Governance and Policy-Making*, Springer.

Roulston, K., 2010. *Reflective Interviewing: A Guide to Theory and Practice*, London: Sage Publications.

Rydin, Y., 2012. Using Actor-Network Theory to understand planning practice: Exploring relationships between actants in regulating low-carbon commercial development. *Planning Theory*, 12(1), pp.23–45.

Saul, J., 2017. European banks struggle to solve toxic shipping debt problem. *Reuters*. Available at: https://www.reuters.com/article/us-europe-banks-shipping/european-

banks-struggle-to-solve-toxic-shipping-debt-problem-idUSKBN1A90GG.

Saunders, M.N.K., 2012. Choosing Research Participants. In G. Symon & C. Cassell, eds. *Qualitative Organizational Research : Core Methods and Current Challenges*. Sage Publications, pp. 35–52.

Scherer, A.G. et al., 2016. Managing for Political Corporate Social Responsibility: New Challenges and Directions for PCSR 2.0. *Journal of Management Studies*, 53(3), pp.273–298.

Scherer, A.G. & Palazzo, G., 2011. The New Political Role of Business in a Globalized World: A Review of a New Perspective on CSR and its Implications for the Firm, Governance, and Democracy. *Journal of Management Studies*, 48(4), pp.899–931.

Scott, J. et al., 2017. The promise and limits of private standards in reducing greenhouse gas emissions from shipping. *Journal of Environmental Law*, 29(2), pp.231–262.

Sea Trade Maritime News, 2017. The end of Hanjin Shipping - officially declared bankrupt. *Sea Trade Maritime News*. Available at: http://www.seatrade-maritime.com/news/asia/the-end-of-hanjin-shipping-officially-declared-bankrupt.html.

Seas at Risk & Transport & Environment, Tackling Ship GHG Emissions at IMO. Available at: https://www.transportenvironment.org/sites/te/files/Ship_Emissions_Outreach_Note.pdf [Accessed April 18, 2018].

Serres, M., 1974. *La Traduction, Hermes III*, Paris: Les Éditions de Minuit.

Shi, Y., 2014. Greenhouse gas emissions from international shipping: the response from China's shipping industry to the regulatory initiatives of the International Maritime Organization. , 29(1), pp.77–115.

Shi, Y., 2016. Reducing greenhouse gas emissions from international shipping: Is it time to consider market-based measures? *Marine Policy*, 64, pp.123–134.

Shore, C. & Wright, S., 2015. Audit Culture Revisited. *Current Anthropology*, 56(3), pp.421–444.

Silber, G.K. et al., 2012. The role of the International Maritime Organization in reducing vessel threat to whales: Process, options, action and effectiveness. *Marine Policy*, 36(6), pp.1221–1233.

Silverman, D., 2007. *A Very Short, Fairly Interesting and Reasonably Cheap Book About Qualitative Research*, London: Sage Publications.

Silverman, D., 2010. *Doing Qualitative Research: A Practical Handbook* 3rd ed., Sage Publications.

Silverman, D., 1993. *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*, Sage Publications.

Simpson, L., 2017a. Live Animal Export: International regulations needed for crew , animal and consumer safety. *Splash247*. Available at: http://splash247.com/live-animal-export-international-regulations-needed-crew-animal-consumer-safety/.

Simpson, L., 2017b. Live Animal Exports: Dirty deeds, done dead cheap. Available at: http://splash247.com/live-animal-exports-dirty-deeds-done-dead-cheap/.

Sjostrom, W., 2004. Ocean Shipping Cartels: A Survey. *Review of Network Economics*, 3(2), pp.107–134.

Skovgaard, J., 2011. *CSR-policy, the case of shipping: A global frontrunner whilst a CSR laggard*,

Smith, T. et al., 2014. *Low Carbon Shipping - A Systems Approach, Final Report*, Available at: https://www.bartlett.ucl.ac.uk/energy/news/documents/Low_Carbon_Shipping_A_Systems_Approach_2014.pdf.

Smith, T.W.P. et al., 2015. *Third IMO GHG Study 2014*, Available at: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Third Greenhouse Gas Study/GHG3 Executive Summary and Report.pdf.

Sommer, J., 1996. Environmental Law-Making by International Organisations. *Max-Planck-Institut für ausländisches öffentliches Recht und Völkerrecht/Max Planck Institute for Comparative Public Law and International Law*, pp.628–667.

Star, S.L. & Griesemer, J.R., 1989. Institutional Ecology, "Translations" and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, 19(3), pp.387–420.

Stevens, L. et al., 2015. Is new emission legislation stimulating the implementation of sustainable and energy-efficient maritime technologies? *Research in Transportation Business and Management*, 17, pp.14–25. Available at: http://dx.doi.org/10.1016/j.rtbm.2015.10.003.

Stokke, O.S., 2013. Regime interplay in Arctic shipping governance: Explaining regional niche selection. *International Environmental Agreements: Politics, Law and Economics*, 13(1), pp.65–85.

Strong, A.L., 2018. Tackling Greenhouse Gas Emissions from the International Maritime Industry. In G. F. Gresh, ed. *Eurasia's Maritime Rise and Global Security*. Palgrave Macmillan, pp. 259–273.

Sturges, J. & Hanrahan, K., 2004. Comparing telephone and face-to-face qualitative interviewing: a research note. *Qualitative Research*, 4(1), pp.107–118.

Svensson, E., 2011. *The Regulation of Global SOx Emissions from Ships: IMO Proceedings 1988-2008*. Chalmers University of Technology, Sweden.

Symon, G. & Cassell, C., 2012. Assessing Qualitative Research. In G. Symon & C. Cassell, eds. *Qualitative Organizational Research : Core Methods and Current Challenges*. Sage Publications, pp. 204–223.

Tan, A.K.-J., 2006. *Vessel-Source Marine Pollution: The Law and Politics of International Regulation*, Cambridge University Press.

The Marshall Islands Registry, 2017. The Republic of the Marshall Islands Registry Now World's 2nd Largest. Available at: https://blog.register-iri.com/about-us/ [Accessed January 8, 2018].

Tracy, S.J., 2010. Qualitative Quality : Eight " Big-Tent " Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16(10), pp.837–851.

Transport & Environment, 2016. IMO scuttles shipping's response to Paris climate deal. *Transport & Environment Website*. Available at: https://www.transportenvironment.org/press/imo-scuttles-shipping's-response-paris-climate-deal [Accessed June 14, 2017].

Transport & Environment, 2017. *Statistical analysis of the energy efficiency performance (EEDI) of new ships built in 2013-2017*, Available at: https://www.transportenvironment.org/sites/te/files/publications/Statistical analysis of the energy efficiency performance %28EEDI%29 of new ships.pdf.

Traut, M. et al., 2018. CO2 abatement goals for international shipping. *Climate Policy*, 18(8), pp.1066–1075. Available at: https://www.tandfonline.com/doi/full/10.1080/14693062.2018.1461059.

UNCC, 2018. The Paris Agreement. *Process and Meetings*. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement [Accessed March 24, 2018].

UNCTAD, 2017a. Merchant fleet by flag of registration and by type of ship, annual, 1980-2017. *UNCTAD STAT*. Available at: http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx [Accessed February 10, 2018].

UNCTAD, 2017b. *Review of Maritime Transport*, Available at: http://unctad.org/en/PublicationsLibrary/rmt2017_en.pdf.

UNCTAD, 2016. *Review of Maritime Transport*, Available at:

http://unctad.org/en/PublicationsLibrary/rmt2016_en.pdf.

UNFCCC, 2017. United Nations Framework Convention on Climate Change: The Paris Agreement. Available at: http://unfccc.int/paris_agreement/items/9485.php [Accessed September 8, 2017].

United Nations Climate Change, 2017. The Paris Agreement. Available at: http://unfccc.int/paris_agreement/items/9485.php [Accessed December 14, 2017].

Vatin, F., 2013. Valuation as Evaluating and Valorizing. , 1(1), pp.31–50.

Veiga, J.L., 2002. Safety Culture in Shipping. *WMU Journal of Maritime Affairs*, 1(1), pp.17–31.

Venturini, T., 2012. Building on faults: How to represent controversies with digital methods. *Public Understanding of Science*, 21(7), pp.796–812.

Venturini, T., 2009. Diving in magma: how to explore controversies with actor-network theory. *Public Understanding of Science*, 19(3), pp.258–273.

Vidal, J., 2009. Health risks of shipping pollution have been ' underestimated '. *The Guardian*, pp.1–5. Available at: http://www.theguardian.com/environment/2009/apr/09/shipping-pollution.

Vilsted, P., 2004. *Corporate Social Responsibility and the Shipping Industry*, Available at: http://www.he-alert.org/filemanager/root/site_assets/standalone_pdfs_0355-/he00375.pdf.

Vinnari, Ei., Baxter, J. & Chua, W.F., 2018. Special Issue: Accounting , Accountability and Animals. *Criticial Perspectives on Accounting*, Call for P.

Vogl, S., 2013. Telephone Versus Face-to-Face Interviews: Mode Effect on Semistructured Interviews with Children. *Sociological Methodology*, 43(1), pp.133–177.

Wan, Z. et al., 2018. Decarbonizing the international shipping industry: Solutions and policy recommendations. *Marine Pollution Bulletin*, 126(September 2017), pp.428–435.

Wang, H., 2010. Reducing GHG mitigation costs in the shipping industry using the clean development mechanism. *Management of Environmental Quality: An International Journal*, 21(4), pp.452–463.

Wells, P.G., 2017. The iconic Torrey Canyon oil spill of 1967 - Marking its legacy. *Marine Pollution Bulletin*, 115(1–2), pp.1–2.

Whelan, G., 2012. The Political Perspective of Corporate Social Responsibility: A Critical Research Agenda. *Business Ethics Quarterly*, 22(4), pp.709–737.

Whittle, A. & Spicer, A., 2008. Is Actor Network Theory Critique? *Organization Studies*, 29(4), pp.611–629.

Woolgar, S. & Neyland, D., 2013. *Mundane Governance: Ontology and Accountability*, Oxford: Oxford University Press.

World Maritime News, 2017. 2020 Sulphur Cap: Maersk Is Not on the Scrubber Team | World Maritime News. *World Maritime News*. Available at: https://worldmaritimenews.com/archives/232490/2020-sulphur-cap-maersk-is-not-on-the-scrubber-team/.

World Maritime News, 2018. Hapag-Lloyd CEO: 9 of 20 Major Shipping Firms Will Disappear by End of 2018. Available at: https://worldmaritimenews.com/archives/241228/hapag-lloyd-ceo-9-of-20-major-shipping-firms-will-disappear-by-end-of-2018/.

World Shipping Council, 2015. Carbon Emissions. Available at: http://www.worldshipping.org/industry-issues/environment/air-emissions/carbon-emissions [Accessed May 8, 2015].

World Shipping Council, 2018a. Global Container Fleet. Available at: http://www.worldshipping.org/about-the-industry/containers/global-container-fleet [Accessed January 29, 2018].

World Shipping Council, 2018b. Industry Issues: Environment. Available at: http://www.worldshipping.org/industry-issues/environment [Accessed January 9, 2018].

Yaneva, A., 2003. When a bus met a museum: following artists, curators and workers in art installation. *Museum and Society*, 1(3), pp.116–131.

Young, O.R., 2009. The arctic in play: Governance in a time of rapid change. *International Journal of Marine and Coastal Law*, 24(2), pp.423–442.

Zerubavel, E., 1999. *The Clockwork Muse: A Practical Guide to Writing Theses, Dissertation, and Books*, Cambridge, MA: Harvard University Press.

Zhou, P. & Wang, H., 2014. Carbon capture and storage - Solidification and storage of carbon dioxide captured on ships. *Ocean Engineering*, 91, pp.172–180.

ZME Science, 2017. This is what 109 ,000 horsepower looks like — meet the biggest engine in the world. Available at: https://www.zmescience.com/science/biggest-most-poweful-engine-world/ [Accessed February 5, 2018].

Appendix 1: Core Themes for Interviews

<table>
<tr><td colspan="2">All</td></tr>
<tr><td colspan="2">• Details on the interviewee's organisation/Delegation
• Details on interviewee's role in organisation/Delegation
• Interviewee's experience</td></tr>
<tr><td>IMO Delegate</td><td>External Organisation</td></tr>
<tr><td>MEPC Process:
• Creating Submissions
• Capturing and representing interests
• Outreach Process
• Preparation for meeting
• Activities during meeting
• Effective contributions to the process
• Negotiation Strategies
• The role of the Chairman
• Conflicting regulatory principles
• The EU in the process
• Opinions on the outcomes of the recent MEPCs (68,69,70)
• Key parts of the regulatory process
• Difficulties/improving the process</td><td>Perspectives on the IMO MEPC:
• Thoughts on the regulatory outputs
• Regulation in practice
• Implementation process
• Are your interests represented in the IMO?
• Difficulties/improving the process
• Interactions with the IMO/MEPC
• Interactions with Delegates
• Organisations role in reducing carbon emissions, efforts, measures, initiatives etc.</td></tr>
<tr><td>External Influences:
• Regional regulations (e.g. EU MRV)
• CBDR
• Paris COP21 and Agreement
• Self Governance efforts from the industry</td><td>External Influences:
• Regional regulations (e.g. EU MRV)
• CBDR
• Paris COP21 and Agreement
• Self Governance efforts from the industry</td></tr>
</table>

This table represents the themes that were generally explored. Questions were adapted to the individual interviewee in advance of and during the interview.

Appendix 2: Ethics Letter

University of St Andrews

University Teaching and Research Ethics Committee

28th April 2015
Alison MacNeil-Weir
School of Management

Ethics Reference No: *Please quote this ref on all correspondence*	**MN11464**
Project Title:	Translation of Emission Management in the Container Shipping Industry
Researchers Name(s):	**Alison MacNeill-Weir**
Supervisor(s):	**Dr P Roscoe and Dr S Russell**

Thank you for submitting your application which was considered by the School of Management's Ethics Committee. The following documents were reviewed:

1. Ethical Application Form
2. Participant Information Sheet
3. Coded Data Consent Form

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf) are adhered to.

Yours sincerely

Dr John Desmond
Convenor of the School Ethics Committee

cc Shona Deigman

UTREC Convenor, Mansefield, 3 St Mary's Place, St Andrews, KY16 9UY
Email: utrec@st-andrews.ac.uk Tel: 01334 462866
The University of St Andrews is a charity registered in Scotland: No SC013532

Appendix 3: Statements by China and the Cook Islands

(Source text: MEPC69/21/Add.1 Annex 17, pp7-8)

Statement by the Delegation of China

"We note with great regret an article published yesterday on the website of Seas at Risk. The article covered in an extremely irresponsible way what the Organization is doing to reduce GHG emission from international shipping. That article did not mention the significant progress in establishing a mandatory data collection scheme which is soon to be adopted in this Organization. Instead, the article smears and slanders the Member States in their efforts in scientifically and effectively carrying out the work of GHG reduction.

Seas at Risk is a subsidiary organ annexed to CSC. CSC, as a NGO with consultative status with this Organization, fully participated in the discussion of this session of the MEPC.

It is very regrettable that we have to point out that CSC misplaced and failed the trust we as Member States accord to it and abused the rights to attend IMO meetings.

We are here to call upon fellow Member States and organizations with consultative status with this Organization, to cherish the spirit of cooperation that our Organization has been thriving upon to safeguard this Organization's credibility. We also kindly request the Secretariat to take effective measures to clear up the glaring influence caused by that slandering article."

Statement by the Delegation of the Cook Islands

"It is with considerable reluctance that we comment on this matter, however as one of two Parties singled out for special attention by an NGO present here in this room we have to say that we share the concerns raised by China.

Indeed, we note that there was a twitter feed running during yesterday's sessions which was giving a running commentary on discussions, taking comments out of context, misrepresenting country positions and all this before the group had even found resolution on some of the more contentious matters. We do consider this a clear abuse of the privilege that has been extended to particular groups and individuals to participate in such important sessions of the IMO MEPC.

Turning to the published article which has so grossly misreported our position and our contribution to the work of this Organisation, we find this extremely disappointing, as people here know we were supporting a significant proportion of members in this room in finding a workable solution to the challenge of assessing and responding to GHG emissions in the shipping sector.

It is disappointing also because it diminishes what we consider to be a landmark decision taken by the membership on a mandatory data collection system which needs to be celebrated and not scorned.

Of course we absolutely support the freedoms of all groups participating here in our sessions, but this must extend to the members as well – we need to feel free to express our views without the threat of others reporting these live out on the worldwide web and as I say, taken out of context and misrepresented.

We will leave it there, but wish to register this concern with your Committee and the Secretariat, and of course my delegation absolutely refutes the claims made in such articles and twitter feeds. We reserve the right, if needed, to come back to this issue at appropriate future sessions of IMO."

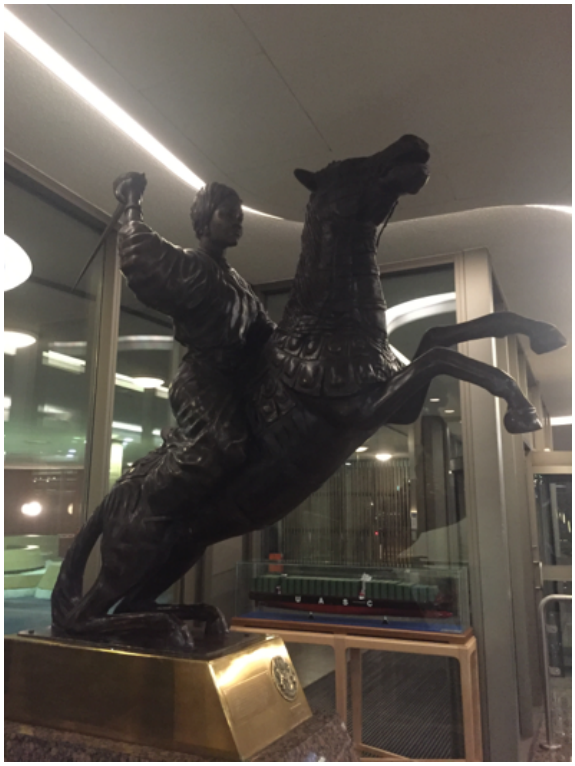
Appendix 4: Photographs

Photo 1: External façade of IMO (Official IMO Photograph).

Photo 2: Close-up of ship feature of external façade (Official IMO Photograph).

Photo 3: Greco-Roman Figurehead.

Photo 4: Gift from the Federal Government of Nigeria: Representation of Queen Amina during her 16th Century reign



[A United Arab Shipping Company container ship is shown in the background]

Photo 5: Gift from the Ministry of Transport of the State of Qatar: A model LNG carrier.

Photo 6: Gifts from the Republic of Cyprus: 'A Cyprus-Greek Merchant ship (top) and a Cyrpus-Mycenaean ship' (bottom).

[The plaques explain that the top ship is a model of the Kyrenia Ship from the 'latter third of the 4th century B.C. and that the lower ship is a model of a late Bronze Age ship circa 1450-1225 B.C. Both ships were merchant vessels.]

Photo 7: Three model ships in open space used at break times.

Photo 8: Model ships line a corridor.

Photo 9: Gift from the Government of Kuwait: a camel saddle and caparison.

Photo 10: Gift from the Government of the Republic of Gabon: A statuette in bois de fer.

Photo 11: Gift from Trinity House: a lighthouse optic from Orfordness lighthouse.

Photo 12: A gift from the Kingdom of Morocco: an ornate fountain.

Photo 13: Plenary room, empty at end of day. About a third of the room is captured in this photo.

Photo 14: Chairman's position at the front of plenary.

Photo 15: Plenary room full (Official IMO Photograph).

Photo 16: Committee Room 11-13.

Appendix 5: The Three-Step Approach

(Information adapted from: Hughes, E: '*Recent developments at IMO to address GHG emissions from ships*' Presented at a Side Event COP22 in November 2016)

At MEPC68 (May 2015) the Committee agreed the Three-Step Approach under Agenda Item: Further Technical and Operational Measures For Enhancing Energy Efficiency of International Shipping

The three-step approach is aimed to increase energy efficiency of ships and in doing so reduce CO_2. Its steps include:

1. Data Collection
2. Data Analysis
3. Decision Making on what further measures, if any, are required.

The data collection during step 1 'will provide the basis for an objective, transparent and inclusive policy debate in the MEPC' (ibid). The details of steps 2 and 3 have yet to be determined. The MEPC have agreed on a Data Collection System for Fuel Oil Consumption (DCS) to fulfil step 1.

Ships of 5,000 GT and above will be required to submit to their Administration annual reports on fuel oil consumption and transport work parameters, via a methodology included in the Ship Energy Efficiency Management Plan (SEEMP). Administrations are expected to submit aggregated data to IMO, which will maintain an anonymised IMO Ship Fuel Oil Consumption Database. January 1st 2019 marks the first data "calendar year" for collection.

Appendix 6: Timeline Comparisons

ANNEX

POTENTIAL TIMELINE FOR FAIR SHARE AND ITS FIT TO THE THREE-STEP APPROACH

Timeline	Fair share	***Three-step approach*** *(to develop further technical and operational measures for enhancing the energy efficiency and address GHG emissions from international shipping)*
October 2016 (MEPC 70)	1. Discussion of the concept of "International shipping's fair share" 2. Establish intersessional work plan	***Phase 1: Data collection*** *Adoption of Data Collection System*
May 2017 (MEPC 71)	3. Exploration and evaluation of all possible methods to define the "fair share" 4. Discussion of time horizon (reference years, annual or aggregated objectives) 5. Discussion of scope (GHGs to be considered) 6. Intersessional work: Application of the methodology to define provisional shipping's fair share	*28/08/2017: Tacit acceptance to establish a data collection system* *February 2018: Potential entry into force of Data Collection System*
April 2018 (MEPC 72)	7. Selection of method 8. Identification of a provisional fair share and discussion of any further work/steps that this implies	
October 2018 (MEPC 73)	9. Preparation of a report/statement to the facilitative dialogue on UNFCCC stock take	*1st January 2019: Ships starting to collect data*
2019 (MEPC 74) and later		
2021-2022	10. Revision or updating of any estimated fair share, pending data collected in the three-step approach.	***Phase 2: Analysis***
20XX		***Timeline to be continued, including Phase 3***

ANNEX 11

ROADMAP FOR DEVELOPING A COMPREHENSIVE IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

In order to build upon, and bring together, the various streams of activity that have already been taking place in IMO in relation to the reduction of GHG emissions from international shipping, including the technical and operational measures (EEDI and SEEMP) in force since 2013, the adoption of the data collection system at MEPC 70 and various technical cooperation activities and major projects, the MEPC approved the *Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships*, set out below.

October 2016 (MEPC 70)	- Adoption of Data Collection System (DCS) - Voluntary data collection and submission begins - Approval of Roadmap
Week before MEPC 71	- Intersessional meeting to start discussions on a comprehensive IMO strategy on reduction of GHG emissions from ships, taking into account inputs such as: (1) Third IMO GHG Study; (2) submissions on the elements below and on existing activities related to GHG emissions reductions by States and stakeholders; and (3) a technical paper by the Secretariat compiling a list of existing IMO activity related to reducing GHG emissions in the shipping sector. The discussions should include but not be limited to the elements below: • Levels of ambition and guiding principles for the strategy; • Emissions scenarios; • Assessment of the projected future demand for shipping; • Parameters/indicators on energy efficiency of ships (current status and long-term potential); • Emission reduction opportunities (near-, mid- and long-term actions), including alternative fuels; • Costs and benefits; • Capacity building and technical cooperation; • Barriers to emissions reductions and how to overcome them; • Priority areas for R&D, including in relation to technology; • Impact of EEDI; • Impacts on States, taking into account the HLAP (resolution A.1098(29)); and • Impacts of other regulations on GHG emissions
May 2017 (MEPC 71)	- Discussion continues[1]
September 2017	- Intersessional meeting
Week before MEPC 72	- Intersessional meeting
Spring 2018 (MEPC 72)	- Adoption of initial IMO Strategy[2], including, inter alia, a list of candidate short-, mid- and long term further measures with possible timelines, to be revised as appropriate as additional information becomes available
January 2019	- Start of Phase 1: Data collection (Ships to collect data)

[1] Modality of further intersessional work after MEPC 71 to be considered based on written submissions.

[2] Initial IMO Strategy is subject to revision based on DCS data during 2019-2021 and does not prejudge any specific further measures that may be implemented in phase 3 of the 3-step approach.

Spring 2019 (MEPC 74)	- Discussion continues - Initiation of Fourth IMO GHG Study using data from 2012-2018
Summer 2020	- Data for 2019 to be reported to IMO
Autumn 2020 (MEPC 76)	- Start of Phase 2: data analysis (no later than autumn 2020) - Discussion continues - Publication of Fourth IMO GHG Study for consideration by MEPC 76[3]
Spring 2021 (MEPC 77)	- Initiation of work for adjustments on Initial IMO Strategy, based on DCS data - Secretariat report summarizing the 2019 data pursuant to regulation 22A.10
Summer 2021	- Data for 2020 to be reported to IMO
Spring 2022 (MEPC 78)	- Phase 3: Decision step - Discussion continues - Secretariat report summarizing the 2020 data pursuant to regulation 22A.10
Summer 2022	- Data for 2021 to be reported to IMO
Spring 2023 (MEPC 80)	- Adoption of Revised IMO Strategy, including short-, mid- and long-term further measure(s), as required, with implementation schedules - Secretariat report summarizing the 2021 data pursuant to regulation 22A.10

***

[3] Every five (5) years, to publish updated IMO GHG study, as to be decided by the Committee, and to review Strategy (including further measures).